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     (FILE 'HOME' ENTERED AT 16:41:43 ON 15 AUG 2007)

     FILE 'CAPLUS, MEDLINE' ENTERED AT 16:44:34 ON 15 AUG 2007
L1             1 S LAMINARIN (P) HEMATOPOIET?
L2             3 S LAMINARIN (P) REGENERAT?
L3             1 S LAMINARIN (P) BONE MARROW?
L4           283 S LAMINARIN (P) CELLS
L5            14 S LAMINARIN (P) BLOOD CELLS
L6             7 S LAMINARIN (P) PERIPHERAL?
L7           186 S LAMINARIN (P) GROWTH?
L8             6 S LAMINARIN (P) GROWTH? (P) PROMOT?
L9             1 S LAMINARIN (P) LEUKOP?
L10            2 S LAMINARIN (P) CYCLOPHO?
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     (FILE 'HOME' ENTERED AT 16:41:43 ON 15 AUG 2007)

     FILE 'CAPLUS, MEDLINE' ENTERED AT 16:44:34 ON 15 AUG 2007
L1             1 S LAMINARIN (P) HEMATOPOIET?
L2             3 S LAMINARIN (P) REGENERAT?
L3             1 S LAMINARIN (P) BONE MARROW?
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L6             7 S LAMINARIN (P) PERIPHERAL?
L7           186 S LAMINARIN (P) GROWTH?
L8             6 S LAMINARIN (P) GROWTH? (P) PROMOT?
L9             1 S LAMINARIN (P) LEUKOP?
L10            2 S LAMINARIN (P) CYCLOPHO?
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L1 ANSWER 1 OF 1 CAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1996:385442 CAPLUS

DOCUMENT NUMBER: 125:75581

TITLE: Effect of highly branched (1 → 3)-β-D-glucan, OL-2, on zymosan-mediated hydrogen peroxide production by murine peritoneal macrophages

AUTHOR(S): Chiba, Norihisa; Ohno, Naohito; Terui, Takayoshi; Adachi, Yoshiyuki; Yadomae, Toshiro

CORPORATE SOURCE: Lab. Immunopharmacol. Microbial Products, School Pharmacy, Tokyo Univ. Pharmacy Life Sci., Tokyo, 192-03, Japan

SOURCE: Pharmaceutical and Pharmacological Letters (1996), 6(1), 12-15

CODEN: PPLEE3; ISSN: 0939-9488

PUBLISHER: Medpharm Scientific Publishers

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Degree of branching is an important contributing factor to define immunopharmacol. activity of (1→6)-branched (1→3)-β-D-glucans. OL-2 is a highly branched (1→3)-β-D-glucan showing low antitumor activity and high hematopoietic activity. In this paper, we examined effect of OL-2 on zymosan, a particulate β-glucan, mediated H2O2 production by murine peritoneal macrophages (PEM) and compared the activity with other glucans. We used the scopoletin fluorescence assay to measure production of H2O2. The glucans used were laminarin (linear), SPG (branched, degree of branching is 1/3), GRN (branched, 1/3), SSG (branched, 1/2), and OL-2 (branched, 2/3). Pretreatment of proteose peptone elicited PEM with OL-2 for 6 h at 37° inhibited the subsequent zymosan-mediated H2O2 production similar to others. Macrophages elicited by i.p. administration of soluble β-glucans increased zymosan-mediated H2O2 production compared with control group, but the strength of the effect was different among glucans (OL-2 > SSG > GRN). Similar results were observed all the strains of ICR, BALB/c, C3H/HeN, AKR. Antitumor activity of β-glucan was high in the former two strains. These facts strongly suggested that the structure-activity relation of the glucan induced H2O2 production was not strongly correlated with that of antitumor activity.

L2 ANSWER 1 OF 3 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1996:95090 CAPLUS
DOCUMENT NUMBER: 124:126891
TITLE: Cosmetics containing laminarin and oligosaccharides derived therefrom for treatment of skin
INVENTOR(S): Yvin, Jean-Claude; Levasseur, Florence; Hud'homme, Fabienne
PATENT ASSIGNEE(S): Laboratoires Goemar S.A., Fr.
SOURCE: PCT Int. Appl., 26 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9531177	A1	19951123	WO 1995-FR618	19950511
W: JP, US				
RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
FR 2719772	A1	19951117	FR 1994-5795	19940511
FR 2719772	B1	19960802		
EP 759740	A1	19970305	EP 1995-920137	19950511
EP 759740	B1	20010808		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LI, LU, MC, NL, PT, SE				
JP 10500126	T	19980106	JP 1995-529413	19950511
JP 3701972	B2	20051005		
AT 203894	T	20010815	AT 1995-920137	19950511
ES 2161888	T3	20011216	ES 1995-920137	19950511
PT 759740	T	20020130	PT 1995-920137	19950511
US 5980916	A	19991109	US 1996-737134	19961107
GR 3037066	T3	20020131	GR 2001-401938	20011030

PRIORITY APPLN. INFO.: FR 1994-5795 A 19940511
WO 1995-FR618 W 19950511

AB A cosmetic or pharmaceutical compns. containing an effective amount of laminarin or laminarin-derived oligosaccharides as the active ingredient are disclosed. These compns. have stimulating, regenerating conditioning and energizing effects on human dermis fibroblasts and human epidermis keratinocytes. Laminarin was extracted from brown alga and its stimulating effect on cultured human dermis fibroblast was shown. An ointment contained paraffin oil 95.1, polyoxyethylene sorbitan trioleate 2.5, calendula extract 1.0, Melaleuca alternifolia essential oil 0.5, laminarin 0.5, and preservative 0.4%.

L2 ANSWER 2 OF 3 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1950:30541 CAPLUS
DOCUMENT NUMBER: 44:30541
ORIGINAL REFERENCE NO.: 44:5968d-h
TITLE: Correlation of some of the physical and chemical properties of the sea with the chemical constitution of the algae
AUTHOR(S): Black, W. A. P.; Dewar, E. T.
CORPORATE SOURCE: Scottish Seaweed Research Assoc., Musselburgh
SOURCE: J. Marine Biol. Assoc. United Kingdom (1949), 28, 673-99
DOCUMENT TYPE: Journal
LANGUAGE: Unavailable

AB Monthly samples of sea water, taken from 3 localities on the Argyllshire coast from March to March were analyzed for salinity, nitrate, phosphate, dissolved O, and pH; temps. and transparencies also were measured. Surface temps. ranged from 6 to 7° in Jan. to 13° in Aug. Transparencies remained nearly constant at 7-9 m. pH values close to 8.0

were obtained from Oct. to March followed by an increase to 8.1 or over during the period of photosynthesis, while low values of 7.86 to 7.96 were recorded during Aug. and Sept. Salinities varied over the range 33-34%, with maxima in March and Aug. and minima in Jan. Dissolved O satns. were highest in the spring and summer and lowest in Dec. Phosphate and nitrate began to decrease after March and remained at a low level until Sept., when they were again regenerated. Monthly samples of the Laminariaceae, L. saccharina and L. cloustoni were taken from the same localities, and they were analyzed for dry matter, ash, mannitol, laminarin, crude protein, inorg. N, and alginic acid. A correlation was found between seasonal variations in these components and the changes in composition of sea water. A period of rapid photosynthesis occurred from March to June but was much less in July and Aug. when nitrate was undetectable in the H2O and phosphate was very low. Replenishment of the photosynthetic layer with nutrients was retarded in July and Aug., probably because of the warming of the inshore water which set up a thermocline restricting vertical mixing. Autumn cooling facilitated vertical mixing, and a 2nd burst of photosynthesis, but at a reduced rate, occurred in Oct. and Nov.

L2 ANSWER 3 OF 3 MEDLINE on STN
ACCESSION NUMBER: 75223932 MEDLINE
DOCUMENT NUMBER: PubMed ID: 1171669
TITLE: Protoplasts of Trichoderma viride: formation and regeneration.
AUTHOR: Benitez T; Ramos S; Acha I G
SOURCE: Archives of microbiology, (1975 Apr 7) Vol. 103, No. 2, pp. 199-203.
Journal code: 0410427. ISSN: 0302-8933.
PUB. COUNTRY: GERMANY, WEST: Germany, Federal Republic of
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 197511
ENTRY DATE: Entered STN: 10 Mar 1990
Last Updated on STN: 29 Jan 1999
Entered Medline: 7 Nov 1975

AB High yields of protoplasts from the 18-hr old mycelium of Trichoderma viride were obtained by using the lytic system, produced by Streptomyces venezuelae RA and Micromonospora chalcea grown on a synthetic medium containing laminarin and chitin, when 0.7 M MgSO4 or (NH4)2SO4 were used as osmotic stabilizers. Regeneration of these protoplasts occurred through the production of an abortive tube and direct germination of the protoplasts. Regeneration could also take place in the medium used to produce protoplasts, but the process was different in many details.

L3 ANSWER 1 OF 1 MEDLINE on STN
ACCESSION NUMBER: 87010160 MEDLINE
DOCUMENT NUMBER: PubMed ID: 3020136
TITLE: Phagocytosis of unopsonized zymosan particles by trypsin-sensitive and beta-glucan-inhibitable receptors on bone marrow-derived murine macrophages.
AUTHOR: Kadish J L; Choi C C; Czop J K
CONTRACT NUMBER: AI-10356 (NIAID)
AI-22834 (NIAID)
AM-36308 (NIADDK)
+
SOURCE: Immunologic research, (1986) Vol. 5, No. 2, pp. 129-38.
Journal code: 8611087. ISSN: 0257-277X.
PUB. COUNTRY: Switzerland
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
(RESEARCH SUPPORT, NON-U.S. GOV'T)
(RESEARCH SUPPORT, U.S. GOV'T, P.H.S.)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 198611
ENTRY DATE: Entered STN: 2 Mar 1990
Last Updated on STN: 3 Feb 1997
Entered Medline: 7 Nov 1986

AB Murine bone marrow cells, plated at 4 X 10(4) cells/well and cultured in 50% fibroblast CM, yielded pure populations of large, individual, adherent cells that were phagocytic and morphologically indistinguishable from macrophages. Adherent macrophages appeared in small numbers with 24 h of culture, increased to maximal cell numbers within 10 days of culture, and remained at these cell densities for at least 11 weeks in culture. The capacities of adherent macrophages to ingest unopsonized zymosan particles and EsIgG, at inputs of 1.25 X 10(7) targets, were expressed by 7 and 40% of the cells derived from 24-hour cultures, respectively, were increased at nearly identical rates to comparable maximal levels within 10-14 days of culture and were exhibited by essentially all adherent cells derived from 2-11-week cultures. The percentage of adherent macrophages from twelve 3-6-week cultures ingesting greater than or equal to 1, greater than or equal to 6 and greater than or equal to 10 zymosan particles was 89 +/- 5, 47 +/- 11 and 14 +/- 9% (mean +/- SD, n = 12), respectively, and the percentage ingesting greater than or equal to 1, greater than or equal 6 and greater than or equal to 10 EsIgG was 86 +/- 5, 49 +/- 10 and 14 +/- 8%, respectively. Incubation of adherent macrophages with mannan-free ss-glucan particles at inputs of 5 X 10(5)-5 X 10(7)/ml initiated a phagocytic response comparable to that obtained with the same doses of zymosan particles which contained mannan and beta-glucan. Preincubation of adherent macrophages with 100 micrograms/ml of a fully soluble beta-glucan, laminarin, and solubilized barley beta-glucan reduced subsequent macrophage phagocytosis of greater than or equal to 6 zymosan particles by 53 and 40%, respectively. In contrast, yeast alpha-mannan was less than 1% as active, and 10 mg/ml reduced the number of adherent macrophages ingesting greater than or equal to 1 zymosan particles by 64%. At concentrations as high as 2 mg/ml, laminarin and barley beta-glucan had no effect on Fc receptor-mediated ingestion of EsIgG, and mannan at 20 mg/ml also failed to inhibit EsIgG ingestion. Pretreatment of adherent macrophages with 20 micrograms/ml of trypsin reduced the number of cells ingesting greater than or equal to 1 zymosan particles from 89 to 10% and those ingesting greater than or equal to 6 zymosan from 43 to 0%, whereas pretreatment with as much as 100 micrograms/ml of trypsin failed to decrease macrophage ingestion of EsIgG. (ABSTRACT TRUNCATED AT 400 WORDS)

L5 ANSWER 5 OF 14 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1993:445528 CAPLUS
DOCUMENT NUMBER: 119:45528
TITLE: In vitro phenoloxidase activity in the blood of Ciona intestinalis and other ascidians
AUTHOR(S): Jackson, Alan D.; Smith, Valerie J.; Peddie, Clare M.
CORPORATE SOURCE: Gatty Mar. Lab., Univ. St. Andrews, St. Andrews/Fife, KY16 8LB, UK
SOURCE: Developmental & Comparative Immunology (1993), 17(2), 97-108
CODEN: DCIMDQ; ISSN: 0145-305X
DOCUMENT TYPE: Journal
LANGUAGE: English
AB The presence and activation of phenoloxidase in the blood of C. intestinalis and other ascidians was investigated in vitro. In C. intestinalis, phenoloxidase was found to exist in the cells as a proenzyme and to be activated by protease. The microbial carbohydrates, lipopolysaccharide (LPS) or laminarin, also enhanced enzyme activity but a similar effect was not achieved with other sugars. Calcium was not essential for enzyme activity and no enzyme suppression was seen at high calcium concns. Prophenoloxidase activation by LPS was dose related and inhibited by PTU and tropolone. Since benzamidine and STI reduced phenoloxidase activity in cell lysate supernatants, activation may involve other factors, possibly a serine protease. Lastly, as phenoloxidase activity was detected in the blood cells (usually the morula cells) of 8 other ascidian species, it appears that it is widely distributed in the blood of this group of invertebrates.

L5 ANSWER 7 OF 14 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1988:421484 CAPLUS
DOCUMENT NUMBER: 109:21484
TITLE: Isolation and purification of a cell adhesion factor from crayfish blood cells
AUTHOR(S): Johansson, Mats W.; Soederhaell, Kenneth
CORPORATE SOURCE: Dep. Physiol. Bot., Univ. Uppsala, Uppsala, S-751 21, Swed.
SOURCE: Journal of Cell Biology (1988), 106(5), 1795-803
CODEN: JCLBA3; ISSN: 0021-9525
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Isolated granular hemocytes (blood cells) from the crayfish Pacifastacus leniusculus attached and spread in vitro on coverslips coated with a lysate of crayfish hemocytes. No cell adhesion activity was detected in crayfish plasma. The cell adhesion activity was only present in hemocyte lysates in which the prophenoloxidase (proPO) activating system had been activated; either by lipopolysaccharide (LPS), the β-1, 3-glucan laminarin, or by preparing the lysate in 5 mM Ca2+. Both lysates of granular or of semigranular hemocytes could mediate adhesion. After A23187-induced exocytosis of the granular cells, cell adhesion activity could be generated in the secreted material if it was incubated with laminarin. The factor responsible for cell adhesion was isolated from an active hemocyte lysate and purified by ammonium sulfate precipitation, cation exchange chromatog. and Con A-Sepharose; it had a mol. mass of .apprx.76 kD on an SDS-polyacrylamide gel. Ca2+ was necessary in the medium for the cells to adhere to the adhesion factor. It is suggested that in vivo the cell adhesion factor is stored in the secretory granules of the semigranular and the granular cells in a putative inactive pro-form, which can be released during exocytosis and, in the presence of β-1,3-glucans or LPS, be activated outside the cells to mediate cell attachment and spreading, processes of essential importance in arthropod host defense.

L5 ANSWER 8 OF 14 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1984:153863 CAPLUS
DOCUMENT NUMBER: 100:153863
TITLE: A seed storage protein with possible self-affinity through lectin-like binding
AUTHOR(S): Langston-Unkefer, Pat J.; Gade, Wayne
CORPORATE SOURCE: Agric. Res. Serv., U. S. Dep. Agric., Madison, WI, 53706, USA
SOURCE: Plant Physiology (1984), 74(3), 675-80
CODEN: PLPHAY; ISSN: 0032-0889
DOCUMENT TYPE: Journal
LANGUAGE: English

AB The primary storage protein of oat (Avena sativa) seeds, globulin, was shown to have a specific carbohydrate-binding activity. The globulin was capable of hemagglutinating rabbit red blood cells and this hemagglutination was inhibited by the β-glucan, laminarin, as well as by carbohydrate which had been cleaved from the native globulin. Globulin with carbohydrate-binding activity was isolated from cell wall prepns. and from defatted flour. The lectin activity apparently resides in the α-subunit of the globulin and has affinity for the carbohydrate which is O-glycosidically linked to the globulin. A portion of this carbohydrate is attached to the β-subunit. Two affinity columns were synthesized utilizing laminarin and the carbohydrate from the native globulin as ligands. The hemagglutinating activity bound to both of these columns. The activity was specifically eluted from the globulin-carbohydrate affinity column with carbohydrate cleaved from native globulin by an alkali-catalyzed β-elimination. The possible roles of this unique self-binding capacity are discussed.

L5 ANSWER 9 OF 14 MEDLINE on STN
ACCESSION NUMBER: 2004151309 MEDLINE
DOCUMENT NUMBER: PubMed ID: 15043939
TITLE: Microbial infection causes the appearance of hemocytes with extreme spreading ability in monolayers of the tobacco hornworm Manduca sexta.
AUTHOR: Dean Paul; Richards Elaine H; Edwards John P; Reynolds Stuart E; Charnley Keith
CORPORATE SOURCE: Department of Biology and Biochemistry, University of Bath, Claverton Down, Bath BA2 7AY, UK.. paul.dean@bristol.ac.uk
SOURCE: Developmental and comparative immunology, (2004 Jun) Vol. 28, No. 7-8, pp. 689-700.
Journal code: 7708205. ISSN: 0145-305X.
PUB. COUNTRY: United States
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE) (RESEARCH SUPPORT, NON-U.S. GOV'T)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 200411
ENTRY DATE: Entered STN: 27 Mar 2004
Last Updated on STN: 11 Nov 2004
Entered Medline: 10 Nov 2004

AB The ability to adhere to and spread on a surface is a common property of insect blood cells. Spreading on a glass surface by insect hemocytes is often used as a measure of immune fitness that can be inhibited by some insect pathogens and parasites. Here, we report that upon infection of the tobacco hornworm Manduca sexta with either a fungus (Beauveria bassiana) or a bacterium (Photorhabdus luminescens), a new type of hemocyte, not previously observed in healthy insects, was found in hemocyte monolayers. These cells have a distinctive morphology, characterised by extreme spreading ability. They achieve a diameter of up to 120 microm after 1 h on glass coverslips and are therefore extremely thin. These hyper-spreading cells first appear in fungal-infected insects prior to hyphal growth. Their numbers later fall to zero as the pathogen

begins to proliferate. The same hyper-spreading cells are induced after a 24 h delay following an injection of laminarin, a source of the fungal cell wall polymer beta-1,3-glucans. Wounding, on the other hand, did not cause the appearance of hyper-spreading cells. Evidence is presented here that is consistent with these spreading cells having a role in the cellular immune response of nodule formation.

L5 ANSWER 10 OF 14 MEDLINE on STN
ACCESSION NUMBER: 2000092910 MEDLINE
DOCUMENT NUMBER: PubMed ID: 10625682
TITLE: A lipopolysaccharide- and beta-1,3-glucan-binding protein from hemocytes of the freshwater crayfish Pacifastacus leniusculus. Purification, characterization, and cDNA cloning.
AUTHOR: Lee S Y; Wang R; Soderhall K
CORPORATE SOURCE: Department of Comparative Physiology, Evolutionary Biology Center, Uppsala University, Norbyvagen 18A, S-75236, Uppsala, Sweden.
SOURCE: The Journal of biological chemistry, (2000 Jan 14) Vol. 275, No. 2, pp. 1337-43.
Journal code: 2985121R. ISSN: 0021-9258.
PUB. COUNTRY: United States
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
(RESEARCH SUPPORT, NON-U.S. GOV'T)
LANGUAGE: English
FILE SEGMENT: Priority Journals
OTHER SOURCE: GENBANK-AJ250128
ENTRY MONTH: 200002
ENTRY DATE: Entered STN: 9 Mar 2000
Last Updated on STN: 9 Mar 2000
Entered Medline: 18 Feb 2000

AB A lipopolysaccharide- and beta-1,3-glucan-binding protein (LGBP) was isolated and characterized from blood cells (hemocytes) of the freshwater crayfish Pacifastacus leniusculus. The LGBP was purified by chromatography on Blue-Sepharose and phenyl-Sepharose, followed by Sephacryl S-200. The LGBP has a molecular mass of 36 kDa and 40 kDa on 10% SDS-polyacrylamide gel electrophoresis under reducing and nonreducing conditions, respectively. The calculated mass of LGBP is 39,492 Da, which corresponds to the native size of LGBP; the estimated pI of the mature LGBP is 5.80. LGBP has binding activity to lipopolysaccharides as well as to beta-1,3-glucans such as laminarin and curdlan, but peptidoglycan could not bind to LGBP. Cloning and sequencing of LGBP showed significant homology with several putative Gram-negative bacteria-binding proteins and beta-1, 3-glucanases. Interestingly, LGBP also has a structure and functions similar to those of the coelomic cytolytic factor-1, a lipopolysaccharide- and glucan-binding protein from the earthworm Eisenia foetida. To evaluate the involvement of LGBP in the prophenoloxidase (proPO) activating system, a polyclonal antibody against LGBP was made and used for the inhibition of phenoloxidase (PO) activity triggered by the beta-1,3-glucan laminarin in the hemocyte lysate of crayfish. The PO activity was blocked completely by the anti-LGBP antibody. Moreover, the PO activity could be recovered by the addition of purified LGBP. These results suggest that the 36-kDa LGBP plays a role in the activation of the proPO activating system in crayfish and thus seems to play an important role in the innate immune system of crayfish.

L5 ANSWER 11 OF 14 MEDLINE on STN
ACCESSION NUMBER: 93387550 MEDLINE
DOCUMENT NUMBER: PubMed ID: 8375567
TITLE: Recognition of yeast cell wall glucan by Atlantic salmon (Salmo salar L.) macrophages.
AUTHOR: Engstad R E; Robertsen B
CORPORATE SOURCE: Department of Marine Biochemistry, Norwegian College of

Fishery Science, University of Tromso.
SOURCE: Developmental and comparative immunology, (1993 Jul-Aug) Vol. 17, No. 4, pp. 319-30.
Journal code: 7708205. ISSN: 0145-305X.
PUB. COUNTRY: United States
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
(RESEARCH SUPPORT, NON-U.S. GOV'T)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 199310
ENTRY DATE: Entered STN: 5 Nov 1993
Last Updated on STN: 5 Nov 1993
Entered Medline: 21 Oct 1993

AB Phagocytosis of yeast (Saccharomyces cerevisiae) glucan particles by Atlantic salmon (Salmo salar L.) pronephric macrophages was studied. The particles contained > 95% glucose linked through beta-1,3- and beta-1,6-glycosidic linkages. The macrophages rapidly phagocytized both native and opsonized glucan particles although the latter were taken up at a higher rate. Within 30 min, 40-60% of the macrophages had taken up > 1 native glucan particle. The uptake of native glucan particles could be inhibited by preincubating the macrophages with laminarin, a soluble beta-1,3-linked glucan, and a soluble yeast glucan made by partial formolysis of glucan particles. Soluble yeast glucan, on the other hand, did not inhibit uptake of serum opsonized glucan particles or sheep red blood cells, which showed that it did not interfere with phagocytosis in general or inhibit phagocytosis through complement receptors. Polyglucoses with glycosidic linkages other than beta-1,3, like dextran, glycogen, and pustulan or the polymannose mannan, showed little or no inhibition of phagocytosis of native glucan particles. Altogether these observations indicate that Atlantic salmon macrophages may have a specific receptor for yeast glucan. Studies with chelator- and heat-treated salmon serum showed that glucan particles were opsonized primarily by activation of the alternative complement pathway. However, the data indicate that serum components other than complement may also be involved in the opsonization of glucan particles.

L5 ANSWER 12 OF 14 MEDLINE on STN
ACCESSION NUMBER: 93273045 MEDLINE
DOCUMENT NUMBER: PubMed ID: 8500645
TITLE: In vitro phenoloxidase activity in the blood of Ciona intestinalis and other ascidians.
AUTHOR: Jackson A D; Smith V J; Peddie C M
CORPORATE SOURCE: Department of Biology and Preclinical Medicine, Gatty Marine Laboratory, University of St Andrews, Fife, Scotland.
SOURCE: Developmental and comparative immunology, (1993 Mar-Apr) Vol. 17, No. 2, pp. 97-108.
Journal code: 7708205. ISSN: 0145-305X.
PUB. COUNTRY: United States
DOCUMENT TYPE: (COMPARATIVE STUDY)
Journal; Article; (JOURNAL ARTICLE)
(RESEARCH SUPPORT, NON-U.S. GOV'T)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 199306
ENTRY DATE: Entered STN: 16 Jul 1993
Last Updated on STN: 16 Jul 1993
Entered Medline: 30 Jun 1993

AB The presence and activation of phenoloxidase in the blood of Ciona intestinalis and other ascidians was investigated in vitro. In C. intestinalis, phenoloxidase was found to exist in the cells as a proenzyme and to be activated by proteases. The microbial carbohydrates, LPS or laminarin, also enhanced enzyme activity but a similar effect was not achieved with other sugars. Calcium was not essential for enzyme

activity and no enzyme suppression was seen at high calcium concentrations. Prophenoloxidase activation by LPS was further found to be dose related and inhibited by PTU and tropolone. Since benzamidine and STI reduced phenoloxidase activity in cell lysate supernatants, activation may involve other factors, possibly a serine protease. Lastly, as phenoloxidase activity was detected in the blood cells (usually the morula cells) of eight other ascidian species, it appears that it is widely distributed in the blood of this group of invertebrates.

L5 ANSWER 13 OF 14 MEDLINE on STN
ACCESSION NUMBER: 90264428 MEDLINE
DOCUMENT NUMBER: PubMed ID: 2111817
TITLE: Purification and characterization of a beta-1,3-glucan binding protein from plasma of the crayfish Pacifastacus leniusculus.
AUTHOR: Duvic B; Soderhall K
CORPORATE SOURCE: Department of Physiological Botany, University of Uppsala, Sweden.
SOURCE: The Journal of biological chemistry, (1990 Jun 5) Vol. 265, No. 16, pp. 9327-32.
Journal code: 2985121R. ISSN: 0021-9258.
PUB. COUNTRY: United States
DOCUMENT TYPE: (COMPARATIVE STUDY)
Journal; Article; (JOURNAL ARTICLE)
(RESEARCH SUPPORT, NON-U.S. GOV'T)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 199007
ENTRY DATE: Entered STN: 10 Aug 1990
Last Updated on STN: 10 Aug 1990
Entered Medline: 2 Jul 1990

AB The plasma of the crayfish Pacifastacus leniusculus contains a protein which is able to bind to laminarin (a soluble beta-1,3-glucan) and which has been isolated by two independent methods, affinity precipitation with a beta-1,3-glucan or immunoaffinity chromatography. The purified beta-1,3-glucan binding protein was homogenous as judged by sodium dodecyl sulfate-polyacrylamide gel electrophoresis. It is a monomeric glycoprotein with a molecular mass of approximately 100,000 Da and an isoelectric point of approximately 5.0. Amino acid analysis showed a very high similarity with the amino acid composition of beta-1,3-glucan binding proteins recently purified from two insects, the cockroach Blaberus craniifer and the silkworm Bombyx mori. The N-terminal amino acid sequence was determined to be: H2N-Asp-Ala-Gly-X-Ala-Ser-Leu-Val-Thr-Asn-Phe-Asn-Ser-Ala-Lys-Leu-X-X-Ly s--- Using monospecific rabbit polyclonal antibodies, the presence of this protein has also been shown within the blood cells. The purified beta-1,3-glucan binding protein did not show any peptidase or phenoloxidase activity but was able to enhance the activation of hemocyte-derived peptidase and prophenoloxidase only in the presence of the beta-1,3-glucan, laminarin, whereas mannan, dextran (alpha-glucan), or cellulose (beta-1,4-glucan) incubated with the beta-1,3-glucan binding protein had no effect on these enzyme activities. The beta-1,3-glucan binding protein could only be affinity-precipitated from crayfish plasma by the beta-1,3-glucans laminarin or curdlan (an insoluble beta-1,3-glucan), while mannan or dextran did not bind to the beta-1,3-glucan binding protein. No hemagglutinating activity of the purified beta-1,3-glucan binding protein could be detected.

L5 ANSWER 14 OF 14 MEDLINE on STN
ACCESSION NUMBER: 88228192 MEDLINE
DOCUMENT NUMBER: PubMed ID: 2453523
TITLE: Isolation and purification of a cell adhesion factor from crayfish blood cells.
AUTHOR: Johansson M W; Soderhall K

CORPORATE SOURCE: Department of Physiological Botany, University of Uppsala, Sweden.
SOURCE: The Journal of cell biology, (1988 May) Vol. 106, No. 5, pp. 1795-803.
Journal code: 0375356. ISSN: 0021-9525.
PUB. COUNTRY: United States
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
(RESEARCH SUPPORT, NON-U.S. GOV'T)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 198807
ENTRY DATE: Entered STN: 8 Mar 1990
Last Updated on STN: 8 Mar 1990
Entered Medline: 6 Jul 1988

AB Isolated granular haemocytes (blood cells) from the crayfish Pacifastacus leniusculus attached and spread in vitro on coverslips coated with a lysate of crayfish haemocytes. No cell adhesion activity was detected in crayfish plasma. The cell adhesion activity was only present in haemocyte lysates in which the prophenoloxidase (proPO) activating system (Soderhall and Smith, 1986a, b) had been activated; either by lipopolysaccharide (LPS), the beta-1,3-glucan laminarin , or by preparing the lysate in 5 mM Ca2+. Both lysates of granular or of semigranular haemocytes could mediate adhesion. After A23187-induced exocytosis of the granular cells, cell adhesion activity could be generated in the secreted material if it was incubated with laminarin. The factor responsible for cell adhesion was isolated from an active haemocyte lysate and purified by ammonium sulfate precipitation, cation exchange chromatography and Con A-Sepharose; it had a molecular mass of approximately 76 kD on an SDS-polyacrylamide gel. An antibody to this 76-kD band inhibited cell adhesion. Ca2+ was necessary in the medium for the cells to adhere to the adhesion factor. With cyanide or azide, the cells attached but failed to spread. It is suggested that in vivo the cell adhesion factor is stored in the secretory granules of the semigranular and the granular cells in a putative inactive pro-form, which can be released during exocytosis and, in the presence of beta-1,3-glucans or LPS, be activated outside the cells to mediate cell attachment and spreading, processes of essential importance in arthropod host defense.

L5 ANSWER 5 OF 14 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1993:445528 CAPLUS
DOCUMENT NUMBER: 119:45528
TITLE: In vitro phenoloxidase activity in the blood of Ciona intestinalis and other ascidians
AUTHOR(S): Jackson, Alan D.; Smith, Valerie J.; Peddie, Clare M.
CORPORATE SOURCE: Gatty Mar. Lab., Univ. St. Andrews, St. Andrews/Fife, KY16 8LB, UK
SOURCE: Developmental & Comparative Immunology (1993), 17(2), 97-108
CODEN: DCIMDQ; ISSN: 0145-305X
DOCUMENT TYPE: Journal
LANGUAGE: English
AB The presence and activation of phenoloxidase in the blood of C. intestinalis and other ascidians was investigated in vitro. In C. intestinalis, phenoloxidase was found to exist in the cells as a proenzyme and to be activated by protease. The microbial carbohydrates, lipopolysaccharide (LPS) or laminarin, also enhanced enzyme activity but a similar effect was not achieved with other sugars. Calcium was not essential for enzyme activity and no enzyme suppression was seen at high calcium concns. Prophenoloxidase activation by LPS was dose related and inhibited by PTU and tropolone. Since benzamidine and STI reduced phenoloxidase activity in cell lysate supernatants, activation may involve other factors, possibly a serine protease. Lastly, as phenoloxidase activity was detected in the blood cells (usually the morula cells) of 8 other ascidian species, it appears that it is widely distributed in the blood of this group of invertebrates.

L5 ANSWER 6 OF 14 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1990:419751 CAPLUS
DOCUMENT NUMBER: 113:19751
TITLE: Purification and characterization of a β-1,3-glucan binding protein from plasma of the crayfish Pacifastacus leniusculus
AUTHOR(S): Duvic, Bernard; Soederhaell, Kenneth
CORPORATE SOURCE: Dep. Physiol. Bot., Univ. Uppsala, Uppsala, S-751 21, Swed.
SOURCE: Journal of Biological Chemistry (1990), 265(16), 9327-32
CODEN: JBCHA3; ISSN: 0021-9258
DOCUMENT TYPE: Journal
LANGUAGE: English
AB The plasma of the crayfish P. leniusculus contains a protein which is able to bind to laminarin (a soluble β-1,3-glucan) and which has been isolated by two independent methods, affinity precipitation with a β-1,3-glucan or immunoaffinity chromatog. The purified β-1,3-glucan binding protein was homogenous as judged by SDS-PAGE. It is a monomeric glycoprotein with a mol. mass of .apprx.100,000 Da and an isoelec. point of .apprx.5.0. Amino acid anal. showed a very high similarity with the amino acid composition of β-1,3-glucan binding proteins recently purified from two insects, the cockroach Blaberus craniifer and the silkworm Bombyx mori. The N-terminal amino acid sequence was determined Using monospecific rabbit polyclonal antibodies, the presence of this protein has also been shown within the blood cells. The purified β-1,3-glucan binding protein did not show any peptidase or phenoloxidase activity but was able to enhance the activation of hemocyte-derived peptidase and prophenoloxidase only in the presence of the β-1,3-glucan, laminarin, whereas mannan, dextran (α-glucan), or cellulose (β-1,4-glucan) incubated with the β-1,3-glucan binding protein had no effect on these enzyme activities. The β-1,3-glucan binding protein could only be affinity-precipitated from crayfish plasma by the β-1,3-glucans laminarin or curdlan (an insol. β-1,3-glucan), while mannan

or dextran did not bind to the β-1,3-glucan binding protein. No hemagglutinating activity of the purified β-1,3-glucan binding protein could be detected.

L5 ANSWER 7 OF 14 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1988:421484 CAPLUS
DOCUMENT NUMBER: 109:21484
TITLE: Isolation and purification of a cell adhesion factor from crayfish blood cells
AUTHOR(S): Johansson, Mats W.; Soèderhaell, Kenneth
CORPORATE SOURCE: Dep. Physiol. Bot., Univ. Uppsala, Uppsala, S-751 21, Swed.
SOURCE: Journal of Cell Biology (1988), 106(5), 1795-803
CODEN: JCLBA3; ISSN: 0021-9525
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Isolated granular hemocytes (blood cells) from the crayfish Pacifastacus leniusculus attached and spread in vitro on coverslips coated with a lysate of crayfish hemocytes. No cell adhesion activity was detected in crayfish plasma. The cell adhesion activity was only present in hemocyte lysates in which the prophenoloxidase (proPO) activating system had been activated; either by lipopolysaccharide (LPS), the β-1, 3-glucan laminarin, or by preparing the lysate in 5 mM Ca2+. Both lysates of granular or of semigranular hemocytes could mediate adhesion. After A23187-induced exocytosis of the granular cells, cell adhesion activity could be generated in the secreted material if it was incubated with laminarin. The factor responsible for cell adhesion was isolated from an active hemocyte lysate and purified by ammonium sulfate precipitation, cation exchange chromatog. and Con A-Sepharose; it had a mol. mass of .apprx.76 kD on an SDS-polyacrylamide gel. Ca2+ was necessary in the medium for the cells to adhere to the adhesion factor. It is suggested that in vivo the cell adhesion factor is stored in the secretory granules of the semigranular and the granular cells in a putative inactive pro-form, which can be released during exocytosis and, in the presence of β-1,3-glucans or LPS, be activated outside the cells to mediate cell attachment and spreading, processes of essential importance in arthropod host defense.

L5 ANSWER 8 OF 14 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1984:153863 CAPLUS
DOCUMENT NUMBER: 100:153863
TITLE: A seed storage protein with possible self-affinity through lectin-like binding
AUTHOR(S): Langston-Unkefer, Pat J.; Gade, Wayne
CORPORATE SOURCE: Agric. Res. Serv., U. S. Dep. Agric., Madison, WI, 53706, USA
SOURCE: Plant Physiology (1984), 74(3), 675-80
CODEN: PLPHAY; ISSN: 0032-0889
DOCUMENT TYPE: Journal
LANGUAGE: English
AB The primary storage protein of oat (Avena sativa) seeds, globulin, was shown to have a specific carbohydrate-binding activity. The globulin was capable of hemagglutinating rabbit red blood cells and this hemagglutination was inhibited by the β-glucan, laminarin, as well as by carbohydrate which had been cleaved from the native globulin. Globulin with carbohydrate-binding activity was isolated from cell wall prepns. and from defatted flour. The lectin activity apparently resides in the α-subunit of the globulin and has affinity for the carbohydrate which is O-glycosidically linked to the globulin. A portion of this carbohydrate is attached to the β-subunit. Two affinity columns were synthesized utilizing laminarin and the carbohydrate from the native globulin as ligands. The hemagglutinating activity bound to both of these columns.

The activity was specifically eluted from the globulin-carbohydrate affinity column with carbohydrate cleaved from native globulin by an alkali-catalyzed β-elimination. The possible roles of this unique self-binding capacity are discussed.

L5 ANSWER 9 OF 14 MEDLINE on STN
ACCESSION NUMBER: 2004151309 MEDLINE
DOCUMENT NUMBER: PubMed ID: 15043939
TITLE: Microbial infection causes the appearance of hemocytes with extreme spreading ability in monolayers of the tobacco hornworm Manduca sexta.
AUTHOR: Dean Paul; Richards Elaine H; Edwards John P; Reynolds Stuart E; Charnley Keith
CORPORATE SOURCE: Department of Biology and Biochemistry, University of Bath, Claverton Down, Bath BA2 7AY, UK.. paul.dean@bristol.ac.uk
SOURCE: Developmental and comparative immunology, (2004 Jun) Vol. 28, No. 7-8, pp. 689-700.
Journal code: 7708205. ISSN: 0145-305X.
PUB. COUNTRY: United States
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
(RESEARCH SUPPORT, NON-U.S. GOV'T)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 200411
ENTRY DATE: Entered STN: 27 Mar 2004
Last Updated on STN: 11 Nov 2004
Entered Medline: 10 Nov 2004

AB The ability to adhere to and spread on a surface is a common property of insect blood cells. Spreading on a glass surface by insect hemocytes is often used as a measure of immune fitness that can be inhibited by some insect pathogens and parasites. Here, we report that upon infection of the tobacco hornworm Manduca sexta with either a fungus (Beauveria bassiana) or a bacterium (Photorhabdus luminescens), a new type of hemocyte, not previously observed in healthy insects, was found in hemocyte monolayers. These cells have a distinctive morphology, characterised by extreme spreading ability. They achieve a diameter of up to 120 microm after 1 h on glass coverslips and are therefore extremely thin. These hyper-spreading cells first appear in fungal-infected insects prior to hyphal growth. Their numbers later fall to zero as the pathogen begins to proliferate. The same hyper-spreading cells are induced after a 24 h delay following an injection of laminarin, a source of the fungal cell wall polymer beta-1,3-glucans. Wounding, on the other hand, did not cause the appearance of hyper-spreading cells. Evidence is presented here that is consistent with these spreading cells having a role in the cellular immune response of nodule formation.

L5 ANSWER 10 OF 14 MEDLINE on STN
ACCESSION NUMBER: 2000092910 MEDLINE
DOCUMENT NUMBER: PubMed ID: 10625682
TITLE: A lipopolysaccharide- and beta-1,3-glucan-binding protein from hemocytes of the freshwater crayfish Pacifastacus leniusculus. Purification, characterization, and cDNA cloning.
AUTHOR: Lee S Y; Wang R; Soderhall K
CORPORATE SOURCE: Department of Comparative Physiology, Evolutionary Biology Center, Uppsala University, Norbyvagen 18A, S-75236, Uppsala, Sweden.
SOURCE: The Journal of biological chemistry, (2000 Jan 14) Vol. 275, No. 2, pp. 1337-43.
Journal code: 2985121R. ISSN: 0021-9258.
PUB. COUNTRY: United States
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
(RESEARCH SUPPORT, NON-U.S. GOV'T)
LANGUAGE: English

FILE SEGMENT: Priority Journals
OTHER SOURCE: GENBANK-AJ250128
ENTRY MONTH: 200002
ENTRY DATE: Entered STN: 9 Mar 2000
Last Updated on STN: 9 Mar 2000
Entered Medline: 18 Feb 2000

AB A lipopolysaccharide- and beta-1,3-glucan-binding protein (LGBP) was isolated and characterized from blood cells (hemocytes) of the freshwater crayfish Pacifastacus leniusculus. The LGBP was purified by chromatography on Blue-Sepharose and phenyl-Sepharose, followed by Sephacryl S-200. The LGBP has a molecular mass of 36 kDa and 40 kDa on 10% SDS-polyacrylamide gel electrophoresis under reducing and nonreducing conditions, respectively. The calculated mass of LGBP is 39,492 Da, which corresponds to the native size of LGBP; the estimated pI of the mature LGBP is 5.80. LGBP has binding activity to lipopolysaccharides as well as to beta-1,3-glucans such as laminarin and curdlan, but peptidoglycan could not bind to LGBP. Cloning and sequencing of LGBP showed significant homology with several putative Gram-negative bacteria-binding proteins and beta-1, 3-glucanases. Interestingly, LGBP also has a structure and functions similar to those of the coelomic cytolytic factor-1, a lipopolysaccharide- and glucan-binding protein from the earthworm Eisenia foetida. To evaluate the involvement of LGBP in the prophenoloxidase (proPO) activating system, a polyclonal antibody against LGBP was made and used for the inhibition of phenoloxidase (PO) activity triggered by the beta-1,3-glucan laminarin in the hemocyte lysate of crayfish. The PO activity was blocked completely by the anti-LGBP antibody. Moreover, the PO activity could be recovered by the addition of purified LGBP. These results suggest that the 36-kDa LGBP plays a role in the activation of the proPO activating system in crayfish and thus seems to play an important role in the innate immune system of crayfish.

L5 ANSWER 11 OF 14 MEDLINE on STN
ACCESSION NUMBER: 93387550 MEDLINE
DOCUMENT NUMBER: PubMed ID: 8375567
TITLE: Recognition of yeast cell wall glucan by Atlantic salmon (Salmo salar L.) macrophages.
AUTHOR: Engstad R E; Robertsen B
CORPORATE SOURCE: Department of Marine Biochemistry, Norwegian College of Fishery Science, University of Tromso.
SOURCE: Developmental and comparative immunology, (1993 Jul-Aug) Vol. 17, No. 4, pp. 319-30.
Journal code: 7708205. ISSN: 0145-305X.
PUB. COUNTRY: United States
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
(RESEARCH SUPPORT, NON-U.S. GOV'T)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 199310
ENTRY DATE: Entered STN: 5 Nov 1993
Last Updated on STN: 5 Nov 1993
Entered Medline: 21 Oct 1993

AB Phagocytosis of yeast (Saccharomyces cerevisiae) glucan particles by Atlantic salmon (Salmo salar L.) pronephric macrophages was studied. The particles contained > 95% glucose linked through beta-1,3- and beta-1,6-glycosidic linkages. The macrophages rapidly phagocytized both native and opsonized glucan particles although the latter were taken up at a higher rate. Within 30 min, 40-60% of the macrophages had taken up > 1 native glucan particle. The uptake of native glucan particles could be inhibited by preincubating the macrophages with laminarin, a soluble beta-1,3-linked glucan, and a soluble yeast glucan made by partial formolysis of glucan particles. Soluble yeast glucan, on the other hand, did not inhibit uptake of serum opsonized glucan particles or sheep red blood cells, which showed that it did not interfere with

phagocytosis in general or inhibit phagocytosis through complement receptors. Polyglucoses with glycosidic linkages other than beta-1,3, like dextran, glycogen, and pustulan or the polymannose mannan, showed little or no inhibition of phagocytosis of native glucan particles. Altogether these observations indicate that Atlantic salmon macrophages may have a specific receptor for yeast glucan. Studies with chelator- and heat-treated salmon serum showed that glucan particles were opsonized primarily by activation of the alternative complement pathway. However, the data indicate that serum components other than complement may also be involved in the opsonization of glucan particles.

L5 ANSWER 12 OF 14 MEDLINE on STN
ACCESSION NUMBER: 93273045 MEDLINE
DOCUMENT NUMBER: PubMed ID: 8500645
TITLE: In vitro phenoloxidase activity in the blood of Ciona intestinalis and other ascidians.
AUTHOR: Jackson A D; Smith V J; Peddie C M
CORPORATE SOURCE: Department of Biology and Preclinical Medicine, Gatty Marine Laboratory, University of St Andrews, Fife, Scotland.
SOURCE: Developmental and comparative immunology, (1993 Mar-Apr) Vol. 17, No. 2, pp. 97-108.
Journal code: 7708205. ISSN: 0145-305X.
PUB. COUNTRY: United States
DOCUMENT TYPE: (COMPARATIVE STUDY)
Journal; Article; (JOURNAL ARTICLE)
(RESEARCH SUPPORT, NON-U.S. GOV'T)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 199306
ENTRY DATE: Entered STN: 16 Jul 1993
Last Updated on STN: 16 Jul 1993
Entered Medline: 30 Jun 1993

AB The presence and activation of phenoloxidase in the blood of Ciona intestinalis and other ascidians was investigated in vitro. In C. intestinalis, phenoloxidase was found to exist in the cells as a proenzyme and to be activated by proteases. The microbial carbohydrates, LPS or laminarin, also enhanced enzyme activity but a similar effect was not achieved with other sugars. Calcium was not essential for enzyme activity and no enzyme suppression was seen at high calcium concentrations. Prophenoloxidase activation by LPS was further found to be dose related and inhibited by PTU and tropolone. Since benzamidine and STI reduced phenoloxidase activity in cell lysate supernatants, activation may involve other factors, possibly a serine protease. Lastly, as phenoloxidase activity was detected in the blood cells (usually the morula cells) of eight other ascidian species, it appears that it is widely distributed in the blood of this group of invertebrates.

L5 ANSWER 13 OF 14 MEDLINE on STN
ACCESSION NUMBER: 90264428 MEDLINE
DOCUMENT NUMBER: PubMed ID: 2111817
TITLE: Purification and characterization of a beta-1,3-glucan binding protein from plasma of the crayfish Pacifastacus leniusculus.
AUTHOR: Duvic B; Soderhall K
CORPORATE SOURCE: Department of Physiological Botany, University of Uppsala, Sweden.
SOURCE: The Journal of biological chemistry, (1990 Jun 5) Vol. 265, No. 16, pp. 9327-32.
Journal code: 2985121R. ISSN: 0021-9258.
PUB. COUNTRY: United States
DOCUMENT TYPE: (COMPARATIVE STUDY)
Journal; Article; (JOURNAL ARTICLE)
(RESEARCH SUPPORT, NON-U.S. GOV'T)

LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 199007
ENTRY DATE: Entered STN: 10 Aug 1990
Last Updated on STN: 10 Aug 1990
Entered Medline: 2 Jul 1990

AB The plasma of the crayfish Pacifastacus leniusculus contains a protein which is able to bind to laminarin (a soluble beta-1,3-glucan) and which has been isolated by two independent methods, affinity precipitation with a beta-1,3-glucan or immunoaffinity chromatography. The purified beta-1,3-glucan binding protein was homogenous as judged by sodium dodecyl sulfate-polyacrylamide gel electrophoresis. It is a monomeric glycoprotein with a molecular mass of approximately 100,000 Da and an isoelectric point of approximately 5.0. Amino acid analysis showed a very high similarity with the amino acid composition of beta-1,3-glucan binding proteins recently purified from two insects, the cockroach Blaberus craniifer and the silkworm Bombyx mori. The N-terminal amino acid sequence was determined to be: H2N-Asp-Ala-Gly-X-Ala-Ser-Leu-Val-Thr-Asn-Phe-Asn-Ser-Ala-Lys-Leu-X-X-Ly s--- Using monospecific rabbit polyclonal antibodies, the presence of this protein has also been shown within the blood cells. The purified beta-1,3-glucan binding protein did not show any peptidase or phenoloxidase activity but was able to enhance the activation of hemocyte-derived peptidase and prophenoloxidase only in the presence of the beta-1,3-glucan, laminarin, whereas mannan, dextran (alpha-glucan), or cellulose (beta-1,4-glucan) incubated with the beta-1,3-glucan binding protein had no effect on these enzyme activities. The beta-1,3-glucan binding protein could only be affinity-precipitated from crayfish plasma by the beta-1,3-glucans laminarin or curdlan (an insoluble beta-1,3-glucan), while mannan or dextran did not bind to the beta-1,3-glucan binding protein. No hemagglutinating activity of the purified beta-1,3-glucan binding protein could be detected.

L5 ANSWER 14 OF 14 MEDLINE on STN
ACCESSION NUMBER: 88228192 MEDLINE
DOCUMENT NUMBER: PubMed ID: 2453523
TITLE: Isolation and purification of a cell adhesion factor from crayfish blood cells.
AUTHOR: Johansson M W; Soderhall K
CORPORATE SOURCE: Department of Physiological Botany, University of Uppsala, Sweden.
SOURCE: The Journal of cell biology, (1988 May) Vol. 106, No. 5, pp. 1795-803.
Journal code: 0375356. ISSN: 0021-9525.
PUB. COUNTRY: United States
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
(RESEARCH SUPPORT, NON-U.S. GOV'T)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 198807
ENTRY DATE: Entered STN: 8 Mar 1990
Last Updated on STN: 8 Mar 1990
Entered Medline: 6 Jul 1988

AB Isolated granular haemocytes (blood cells) from the crayfish Pacifastacus leniusculus attached and spread in vitro on coverslips coated with a lysate of crayfish haemocytes. No cell adhesion activity was detected in crayfish plasma. The cell adhesion activity was only present in haemocyte lysates in which the prophenoloxidase (proPO) activating system (Soderhall and Smith, 1986a, b) had been activated; either by lipopolysaccharide (LPS), the beta-1,3-glucan laminarin , or by preparing the lysate in 5 mM Ca2+. Both lysates of granular or of semigranular haemocytes could mediate adhesion. After A23187-induced exocytosis of the granular cells, cell adhesion activity could be generated in the secreted material if it was incubated with

laminarin. The factor responsible for cell adhesion was isolated from an active haemocyte lysate and purified by ammonium sulfate precipitation, cation exchange chromatography and Con A-Sepharose; it had a molecular mass of approximately 76 kD on an SDS-polyacrylamide gel. An antibody to this 76-kD band inhibited cell adhesion. Ca2+ was necessary in the medium for the cells to adhere to the adhesion factor. With cyanide or azide, the cells attached but failed to spread. It is suggested that in vivo the cell adhesion factor is stored in the secretory granules of the semigranular and the granular cells in a putative inactive pro-form, which can be released during exocytosis and, in the presence of beta-1,3-glucans or LPS, be activated outside the cells to mediate cell attachment and spreading, processes of essential importance in arthropod host defense.

L5 ANSWER 1 OF 14 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2004:242908 CAPLUS
DOCUMENT NUMBER: 141:137323
TITLE: Microbial infection causes the appearance of hemocytes with extreme spreading ability in monolayers of the tobacco hornworm Manduca sexta
AUTHOR(S): Dean, Paul; Richards, Elaine H.; Edwards, John P.; Reynolds, Stuart E.; Charnley, Keith
CORPORATE SOURCE: Department of Biology and Biochemistry, University of Bath, Bath, BA2 7AY, UK
SOURCE: Developmental & Comparative Immunology (2004), 28(7-8), 689-700
CODEN: DCIMDQ; ISSN: 0145-305X
PUBLISHER: Elsevier Science B.V.
DOCUMENT TYPE: Journal
LANGUAGE: English
AB The ability to adhere to and spread on a surface is a common property of insect blood cells. Spreading on a glass surface by insect hemocytes is often used as a measure of immune fitness that can be inhibited by some insect pathogens and parasites. Here, the authors report that upon infection of the tobacco hornworm Manduca sexta with either a fungus (Beauveria bassiana) or a bacterium (Photorhabdus luminescens), a new type of hemocyte, not previously observed in healthy insects, was found in hemocyte monolayers. These cells have a distinctive morphol., characterized by extreme spreading ability. They achieve a diameter of up to 120 μm after 1 h on glass coverslips and are therefore extremely thin. These hyper-spreading cells first appear in fungal-infected insects prior to hyphal growth. Their nos. later fall to zero as the pathogen begins to proliferate. The same hyper-spreading cells are induced after a 24 h delay following an injection of laminarin, a source of the fungal cell wall polymer β-1,3-glucans. Wounding, did not cause the appearance of hyper-spreading cells. Evidence is presented here that is consistent with these spreading cells having a role in the cellular immune response of nodule formation.
REFERENCE COUNT: 23 THERE ARE 23 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L5 ANSWER 2 OF 14 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2000:73358 CAPLUS
DOCUMENT NUMBER: 132:204544
TITLE: A lipopolysaccharide- and β-1,3-glucan-binding protein from hemocytes of the freshwater crayfish Pacifastacus leniusculus: Purification, characterization, and cDNA cloning
AUTHOR(S): Lee, So Young; Wang, Ruigong; Soderhall, Kenneth
CORPORATE SOURCE: Department of Comparative Physiology, Evolutionary Biology Center, Uppsala University, Uppsala, S-75236, Swed.
SOURCE: Journal of Biological Chemistry (2000), 275(2), 1337-1343
CODEN: JBCHA3; ISSN: 0021-9258
PUBLISHER: American Society for Biochemistry and Molecular Biology
DOCUMENT TYPE: Journal
LANGUAGE: English
AB A lipopolysaccharide- and β-1,3-glucan-binding protein (LGBP) was isolated and characterized from blood cells (hemocytes) of the freshwater crayfish Pacifastacus leniusculus. The LGBP was purified by chromatog. on Blue-Sepharose and phenyl-Sepharose, followed by Sephacryl S-200. The LGBP has a mol. mass of 36 kDa and 40 kDa on 10% SDS-PAGE under reducing and nonreducing conditions, resp. The calculated mass of LGBP is 39,492 Da, which corresponds to the native size of

LGBP; the estimated pI of the mature LGBP is 5.80. LGBP has binding activity to lipopolysaccharides as well as to β-1,3-glucans such as laminarin and curdlan, but peptidoglycan could not bind to LGBP. Cloning and sequencing of LGBP showed significant homol. with several putative Gram-neg. bacteria-binding proteins and β-1,3-glucanases. Interestingly, LGBP also has a structure and functions similar to those of the coelomic cytolytic factor-1, a lipopolysaccharide- and glucan-binding protein from the earthworm Eisenia foetida. To evaluate the involvement of LGBP in the prophenoloxidase (proPO) activating system, a polyclonal antibody against LGBP was made and used for the inhibition of phenoloxidase (PO) activity triggered by the β-1,3-glucan laminarin in the hemocyte lysate of crayfish. The PO activity was blocked completely by the anti-LGBP antibody. Moreover, the PO activity could be recovered by the addition of purified LGBP. These results suggest that the 36-kDa LGBP plays a role in the activation of the proPO activating system in crayfish and thus seems to play an important role in the innate immune system of crayfish.

REFERENCE COUNT: 59 THERE ARE 59 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L5 ANSWER 3 OF 14 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1994:161400 CAPLUS
DOCUMENT NUMBER: 120:161400
TITLE: Recognition of yeast cell wall glucan by Atlantic salmon (Salmo salar L.) macrophages
AUTHOR(S): Engstad, Rolf E.; Robertsen, Borre
CORPORATE SOURCE: Norweg. Coll. Fish. Sci., Univ. Tromso, Tromso, N-9037, Norway
SOURCE: Developmental & Comparative Immunology (1993), 17(4), 319-30
CODEN: DCIMDQ; ISSN: 0145-305X
DOCUMENT TYPE: Journal
LANGUAGE: English

AB Phagocytosis of yeast (Saccharomyces cerevisiae) glucan particles by Atlantic salmon (Salmo salar L.) pronephric macrophages was studied. The particles contained >95% glucose linked through β-1,3- and β-1,6-glycosidic linkages. The macrophages rapidly phagocytized both native and opsonized glucan particles although the latter were taken up at a higher rate. Within 30 min, 40-60% of the macrophages had taken up >1 native glucan particle. The uptake of native glucan particles could be inhibited by preincubating the macrophages with laminarin, a soluble β-1,3-linked glucan, and a soluble yeast glucan made by partial formolysis of glucan particles. Soluble yeast glucan did not inhibit uptake of serum opsonized glucan particles or sheep red blood cells, which showed that it did not interfere with phagocytosis in general or inhibit phagocytosis through complement receptors. Polyglucoses with glycosidic linkages other than β-1,3, like dextran, glycogen, and pustulant or the polymannose mannan, showed little or no inhibition of phagocytosis of native glucan particles. Apparently, Atlantic salmon macrophages may have a specific receptor for yeast glucan. Studies with chelator- and heat-treated salmon serum showed that glucan particles were opsonized primarily by activation of the alternative complement pathway. However, serum components other than complement may also be involved in the opsonization of glucan particles.

L5 ANSWER 4 OF 14 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1994:5244 CAPLUS
DOCUMENT NUMBER: 120:5244
TITLE: LPS-sensitive protease activity in the blood cells of the solitary ascidian, Ciona intestinalis (L)
AUTHOR(S): Jackson, Alan D.; Smith, Valerie J.
CORPORATE SOURCE: Sch. Biol. Med. Sci., Univ. St. Andrews, St. Andrews/Fife, KY16 8LB, UK
SOURCE: Comparative Biochemistry and Physiology, Part B:

Biochemistry & Molecular Biology (1993), 106B(3), 505-12
CODEN: CBPBB8; ISSN: 0305-0491
DOCUMENT TYPE: Journal
LANGUAGE: English
AB LPS-sensitive protease activity. in the blood cells of the solitary ascidian, Ciona intestinalis, was investigated in vitro. Activity. was induced by the microbial carbohydrates, LPS and laminarin, but not by other sugars or carbohydrates. Activity. was effective against a broad range of chromogenic peptide substrates, dose-related, and inhibited by benzamidine, STI, PMSF, TPCK, TLCK and an organophosphorous insecticide, pirimiphosmethyl. Activity induced by LPS treatment was short-lived and always preceded phenoloxidase activity. in cell lysate supernatants.

L6 ANSWER 1 OF 7 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2006:947522 CAPLUS
DOCUMENT NUMBER: 145:269738
TITLE: Differential infection of mononuclear phagocytes by Francisella tularensis: role of the macrophage mannose receptor
AUTHOR(S): Schulert, Grant S.; Allen, Lee-Ann H.
CORPORATE SOURCE: Inflammation Program, University of Iowa and the VA Medical Center, Iowa City, USA
SOURCE: Journal of Leukocyte Biology (2006), 80(3), 563-571
CODEN: JLBIE7; ISSN: 0741-5400
PUBLISHER: Federation of American Societies for Experimental Biology
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Francisella tularensis (Ft) is a Gram-neg. bacterium and the causative agent of tularemia. It is well established that this organism replicates inside macrophages, but the authors are only beginning to understand this interface at the mol. level. Herein, the authors compared directly the ability of Ft subspecies holarctica live-vaccine strain to infect freshly isolated human peripheral blood monocytes, monocyte-derived macrophages (MDM), and cells of the murine macrophage cell line J774A.1 (J774). The authors now show that unopsonized bacteria infected human MDM fivefold more efficiently than monocytes or J774 cells in standard media. Moreover, enhanced infection of MDM was mediated, in part, by the macrophage mannose receptor (MR). Forming Ft phagosomes accumulated MR, and infection was inhibited by MR-blocking antibody or soluble mannan but not by the dectin-1 ligand laminarin. Up-regulation of MR in MDM (by exposure to interleukin-4) increased Ft phagocytosis, as did expression of MR in J774 cells. Conversely, opsonized Ft were ingested readily by monocytes and MDM. Medium supplementation with 2.5% fresh autologous serum was sufficient to confer opsonophagocytosis and CD11b accumulated in the membrane at sites of Ft engulfment. Infection of monocytes by opsonized Ft was nearly ablated by complement receptor 3 (CR3) blockade. Conversely, MDM used MR and CD11b/CD18 to ingest opsonized organisms. Altogether, the authors' data demonstrate differential infection of mononuclear phagocytes by Ft and define distinct roles for MR and CR3 in phagocytosis.
REFERENCE COUNT: 56 THERE ARE 56 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L6 ANSWER 2 OF 7 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2003:321189 CAPLUS
DOCUMENT NUMBER: 139:51655
TITLE: Induction of TNF-α production from human peripheral blood monocytes with β-1,3-glucan oligomer prepared from laminarin with β-1,3-glucanase from Bacillus clausii NM-1
AUTHOR(S): Miyanishi, Nobumitsu; Iwamoto, Yoshiko; Watanabe, Etsuo; Oda, Tatsuya
CORPORATE SOURCE: Department of Food Science and Technology, Tokyo University of Fisheries, Tokyo, 108-8477, Japan
SOURCE: Journal of Bioscience and Bioengineering (2003), 95(2), 192-195
CODEN: JBBIF6; ISSN: 1389-1723
PUBLISHER: Society for Bioscience and Bioengineering, Japan
DOCUMENT TYPE: Journal
LANGUAGE: English
AB We prepared a β-1,3-glucan oligomer (DP≥4) from laminarin (DP: 25-30) derived from Laminaria digitata with β-1,3-glucanase, and examined its effect on human peripheral blood monocytes. Conditioned medium prepared by incubating monocytes

(MC-CM) with the β-1,3-glucan oligomer showed strong inhibitory activity against the proliferation of human leukemic U937 cells. Since the β-1,3-glucan oligomer had no direct cytotoxic effect on U937 cells up to 1000 μg/mL, the cytotoxicity of the MC-CM may be due to cytotoxic cytokines produced from monocytes stimulated by the β-1,3-glucan oligomer. On the other hand, the MC-CM prepared with original laminarin had little effect on the growth of U937 cells. The cytotoxicity of the MC-CM prepared with the β-1,3-glucan oligomer was significantly reduced by an anti-TNF-α antibody, but the anti-TNF-β antibody had no effect. Our results suggest that the enzymically depolymd. β-1,3-glucan oligomer induces TNF-α production from human monocytes.

REFERENCE COUNT: 17 THERE ARE 17 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L6 ANSWER 3 OF 7 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2001:375342 CAPLUS
DOCUMENT NUMBER: 134:361367
TITLE: Use of heparanase inhibitors for the treatment of heart diseases
INVENTOR(S): Herr, Dieter; Hahn, Alfred; Laux, Volker
PATENT ASSIGNEE(S): Knoll A.-G. Chemische Fabriken, Germany
SOURCE: Ger. Offen., 16 pp.
CODEN: GWXXBX
DOCUMENT TYPE: Patent
LANGUAGE: German
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DE 19955803	A1	20010523	DE 1999-19955803	19991119
WO 2001035967	A1	20010525	WO 2000-EP11441	20001117
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
EP 1229921	A1	20020814	EP 2000-977548	20001117
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR				

PRIORITY APPLN. INFO.: DE 1999-19955803 A 19991119
WO 2000-EP11441 W 20001117

AB The invention concerns the use of heparanase inhibitors for the treatment of heart diseases, especially congestive heart failure, its associated diseases, symptoms, e.g. peripheral edema, lung congestion, liver congestion, dyspnea, chest and abdominal fluid retention. Heparanase inhibitors are glycosaminoglycans; heparin derivs. that contain reduced carboxyl groups, or are partially N-desulfated, N-acetylated etc.; sulfated and/or phosphorylated oligosaccharides; glycomimetic saccharopeptides; laminarin sulfates; suramin; trachyspic acid.

L6 ANSWER 4 OF 7 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1972:549666 CAPLUS
DOCUMENT NUMBER: 77:149666
TITLE: Chemical composition of the Australian bull kelp, Durvillea potatorum
AUTHOR(S): Madgwick, J. C.; Ralph, B. J.
CORPORATE SOURCE: Sch. Biol. Technol., Univ. New South Wales,

Kensington, Australia
SOURCE: Australian Journal of Marine and Freshwater Research (1972), 23(1), 11-16
CODEN: AJMFA4; ISSN: 0067-1940
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Components of the Australian bull kelp, D. potatorum, were as percent of the whole stipe dry weight: crude fiber, 57.40; alginic acid (I), 35.15; "cellulosic" polysaccharide, 22.61; laminarin, 1.79; mannitol, 3.20; N, 1.21, ash, 28.09; insol. ash, 8.81; Ca2+, 1.47; Mg2+, 0.44; Na+, 1.45; K+, 3.36; PO43-, 5.15; Cl-, 5.87; SO42-, 3.49; I-, 0.25; and chlorophyll (II), 0.01. Tissue fractionation showed that the peripheral layer contained .apprx.66% of the total II and 75% of the total phenolic compds., but only 10% of the total I. In whole stipes, ≤66% of the I was in a soluble form.

L6 ANSWER 5 OF 7 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1963:450221 CAPLUS
DOCUMENT NUMBER: 59:50221
ORIGINAL REFERENCE NO.: 59:9133d
TITLE: Laminaria as a rich source of vitamins
AUTHOR(S): Khovrenko, P.
SOURCE: Rybn. Prom. Dal'n. Vost. (1962), (5-6), 36-8
From: Ref. Zh., Khim. 1963, Abstr. No. 3R54.
DOCUMENT TYPE: Journal
LANGUAGE: Unavailable
AB The thallus of Laminaria japonica has com. value. It is rich in mannitol, alginic acids, laminarin, and soluble salts, and contains ascorbic acid and B vitamins. Carotene (0.042-0.77%) was found in air-dried L. japonica and 0.084-0.224% after 30 and 12 months' storage, resp., and in frozen and fresh specimens, of 0.303-0.640 and 1.229-1.710% carotene, resp. Only traces of carotene were found in the inner layers of the thallus; most was in the peripheral layers.

L6 ANSWER 6 OF 7 MEDLINE on STN
ACCESSION NUMBER: 2006517279 IN-PROCESS
DOCUMENT NUMBER: PubMed ID: 16816147
TITLE: Differential infection of mononuclear phagocytes by Francisella tularensis: role of the macrophage mannose receptor.
AUTHOR: Schulert Grant S; Allen Lee-Ann H
CORPORATE SOURCE: Inflammation Program and Department of Microbiology, University of Iowa, 2501 Crosspark Rd., Coralville, 52241, USA.
CONTRACT NUMBER: P01-AI44642 (NIAID)
SOURCE: Journal of leukocyte biology, (2006 Sep) Vol. 80, No. 3, pp. 563-71. Electronic Publication: 2006-06-30.
Journal code: 8405628. ISSN: 0741-5400.
PUB. COUNTRY: United States
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
(RESEARCH SUPPORT, N.I.H., EXTRAMURAL)
LANGUAGE: English
FILE SEGMENT: NONMEDLINE; IN-PROCESS; NONINDEXED; Priority Journals
ENTRY DATE: Entered STN: 31 Aug 2006
Last Updated on STN: 12 Dec 2006
AB Francisella tularensis (Ft) is a Gram-negative bacterium and the causative agent of tularemia. It is well established that this organism replicates inside macrophages, but we are only beginning to understand this interface at the molecular level. Herein, we compared directly the ability of Ft subspecies holarctica live-vaccine strain to infect freshly isolated human peripheral blood monocytes, monocyte-derived macrophages (MDM), and cells of the murine macrophage cell line J774A.1 (J774). We now show that unopsonized bacteria infected human MDM fivefold more efficiently than monocytes or J774 cells in standard media. Moreover, enhanced

infection of MDM was mediated, in part, by the macrophage mannose receptor (MR). Forming Ft phagosomes accumulated MR, and infection was inhibited by MR-blocking antibody or soluble mannan but not by the dectin-1 ligand laminarin. Up-regulation of MR in MDM (by exposure to interleukin-4) increased Ft phagocytosis, as did expression of MR in J774 cells. Conversely, opsonized Ft were ingested readily by monocytes and MDM. Medium supplementation with 2.5% fresh autologous serum was sufficient to confer opsonophagocytosis and CD11b accumulated in the membrane at sites of Ft engulfment. Infection of monocytes by opsonized Ft was nearly ablated by complement receptor 3 (CR3) blockade. Conversely, MDM used MR and CD11b/CD18 to ingest opsonized organisms. Altogether, our data demonstrate differential infection of mononuclear phagocytes by Ft and define distinct roles for MR and CR3 in phagocytosis.

L6 ANSWER 7 OF 7 MEDLINE on STN
ACCESSION NUMBER: 2005557696 MEDLINE
DOCUMENT NUMBER: PubMed ID: 16233391
TITLE: Induction of TNF-alpha production from human peripheral blood monocytes with beta-1,3-glucan oligomer prepared from laminarin with beta-1,3-glucanase from Bacillus clausii NM-1.
AUTHOR: Miyanishi Nobumitsu; Iwamoto Yoshiko; Watanabe Etsuo; Odaz Tatsuya
CORPORATE SOURCE: Department of Food Science and Technology, Tokyo University of Fisheries, 4-5-7 Konan, Minato-ku, Tokyo 108-8477, Japan.
SOURCE: Journal of bioscience and bioengineering, (2003) Vol. 95, No. 2, pp. 192-5.
Journal code: 100888800. ISSN: 1389-1723.
PUB. COUNTRY: Japan
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: NONMEDLINE; PUBMED-NOT-MEDLINE
ENTRY MONTH: 200511
ENTRY DATE: Entered STN: 20 Oct 2005
Last Updated on STN: 9 Nov 2005
Entered Medline: 8 Nov 2005

AB We prepared a beta-1,3-glucan oligomer (DP> or = 4) from laminarin (DP: 25-30) derived from Laminaria digitata with beta-1,3-glucanase, and examined its effect on human peripheral blood monocytes. Conditioned medium prepared by incubating monocytes (MC-CM) with the beta-1,3-glucan oligomer showed strong inhibitory activity against the proliferation of human leukemic U937 cells. Since the beta-1,3-glucan oligomer had no direct cytotoxic effect on U937 cells up to 1000 microg/ml, the cytotoxicity of the MC-CM may be due to cytotoxic cytokines produced from monocytes stimulated by the beta-1,3-glucan oligomer. On the other hand, the MC-CM prepared with original laminarin had little effect on the growth of U937 cells. The cytotoxicity of the MC-CM prepared with the beta-1,3-glucan oligomer was significantly reduced by an anti-TNF-alpha antibody, but the anti-TNF-beta antibody had no effect. Our results suggest that the enzymatically depolymerized beta-1,3-glucan oligomer induces TNF-alpha production from human monocytes.

L6 ANSWER 1 OF 7 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2006:947522 CAPLUS
DOCUMENT NUMBER: 145:269738
TITLE: Differential infection of mononuclear phagocytes by Francisella tularensis: role of the macrophage mannose receptor
AUTHOR(S): Schulert, Grant S.; Allen, Lee-Ann H.
CORPORATE SOURCE: Inflammation Program, University of Iowa and the VA Medical Center, Iowa City, USA
SOURCE: Journal of Leukocyte Biology (2006), 80(3), 563-571
CODEN: JLBIE7; ISSN: 0741-5400
PUBLISHER: Federation of American Societies for Experimental Biology
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Francisella tularensis (Ft) is a Gram-neg. bacterium and the causative agent of tularemia. It is well established that this organism replicates inside macrophages, but the authors are only beginning to understand this interface at the mol. level. Herein, the authors compared directly the ability of Ft subspecies holarctica live-vaccine strain to infect freshly isolated human peripheral blood monocytes, monocyte-derived macrophages (MDM), and cells of the murine macrophage cell line J774A.1 (J774). The authors now show that unopsonized bacteria infected human MDM fivefold more efficiently than monocytes or J774 cells in standard media. Moreover, enhanced infection of MDM was mediated, in part, by the macrophage mannose receptor (MR). Forming Ft phagosomes accumulated MR, and infection was inhibited by MR-blocking antibody or soluble mannan but not by the dectin-1 ligand laminarin. Up-regulation of MR in MDM (by exposure to interleukin-4) increased Ft phagocytosis, as did expression of MR in J774 cells. Conversely, opsonized Ft were ingested readily by monocytes and MDM. Medium supplementation with 2.5% fresh autologous serum was sufficient to confer opsonophagocytosis and CD11b accumulated in the membrane at sites of Ft engulfment. Infection of monocytes by opsonized Ft was nearly ablated by complement receptor 3 (CR3) blockade. Conversely, MDM used MR and CD11b/CD18 to ingest opsonized organisms. Altogether, the authors' data demonstrate differential infection of mononuclear phagocytes by Ft and define distinct roles for MR and CR3 in phagocytosis.
REFERENCE COUNT: 56 THERE ARE 56 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L6 ANSWER 2 OF 7 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2003:321189 CAPLUS
DOCUMENT NUMBER: 139:51655
TITLE: Induction of TNF-α production from human peripheral blood monocytes with β-1,3-glucan oligomer prepared from laminarin with β-1,3-glucanase from Bacillus clausii NM-1
AUTHOR(S): Miyanishi, Nobumitsu; Iwamoto, Yoshiko; Watanabe, Etsuo; Oda, Tatsuya
CORPORATE SOURCE: Department of Food Science and Technology, Tokyo University of Fisheries, Tokyo, 108-8477, Japan
SOURCE: Journal of Bioscience and Bioengineering (2003), 95(2), 192-195
CODEN: JBBIF6; ISSN: 1389-1723
PUBLISHER: Society for Bioscience and Bioengineering, Japan
DOCUMENT TYPE: Journal
LANGUAGE: English
AB We prepared a β-1,3-glucan oligomer (DP≥4) from laminarin (DP: 25-30) derived from Laminaria digitata with β-1,3-glucanase, and examined its effect on human peripheral blood monocytes. Conditioned medium prepared by incubating monocytes

(MC-CM) with the β-1,3-glucan oligomer showed strong inhibitory activity against the proliferation of human leukemic U937 cells. Since the β-1,3-glucan oligomer had no direct cytotoxic effect on U937 cells up to 1000 μg/mL, the cytotoxicity of the MC-CM may be due to cytotoxic cytokines produced from monocytes stimulated by the β-1,3-glucan oligomer. On the other hand, the MC-CM prepared with original laminarin had little effect on the growth of U937 cells. The cytotoxicity of the MC-CM prepared with the β-1,3-glucan oligomer was significantly reduced by an anti-TNF-α antibody, but the anti-TNF-β antibody had no effect. Our results suggest that the enzymically depolymd. β-1,3-glucan oligomer induces TNF-α production from human monocytes.

REFERENCE COUNT: 17 THERE ARE 17 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L6 ANSWER 3 OF 7 CAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2001:375342 CAPLUS
DOCUMENT NUMBER: 134:361367
TITLE: Use of heparanase inhibitors for the treatment of heart diseases
INVENTOR(S): Herr, Dieter; Hahn, Alfred; Laux, Volker
PATENT ASSIGNEE(S): Knoll A.-G. Chemische Fabriken, Germany
SOURCE: Ger. Offen., 16 pp.
CODEN: GWXXBX
DOCUMENT TYPE: Patent
LANGUAGE: German
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DE 19955803	A1	20010523	DE 1999-19955803	19991119
WO 2001035967	A1	20010525	WO 2000-EP11441	20001117
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
EP 1229921	A1	20020814	EP 2000-977548	20001117
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR				

PRIORITY APPLN. INFO.: DE 1999-19955803 A 19991119
WO 2000-EP11441 W 20001117

AB The invention concerns the use of heparanase inhibitors for the treatment of heart diseases, especially congestive heart failure, its associated diseases, symptoms, e.g. peripheral edema, lung congestion, liver congestion, dyspnea, chest and abdominal fluid retention. Heparanase inhibitors are glycosaminoglycans; heparin derivs. that contain reduced carboxyl groups, or are partially N-desulfated, N-acetylated etc.; sulfated and/or phosphorylated oligosaccharides; glycomimetic saccharopeptides; laminarin sulfates; suramin; trachyspic acid.

L6 ANSWER 4 OF 7 CAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1972:549666 CAPLUS
DOCUMENT NUMBER: 77:149666
TITLE: Chemical composition of the Australian bull kelp, Durvillea potatorum
AUTHOR(S): Madgwick, J. C.; Ralph, B. J.
CORPORATE SOURCE: Sch. Biol. Technol., Univ. New South Wales,

Kensington, Australia
SOURCE: Australian Journal of Marine and Freshwater Research (1972), 23(1), 11-16
CODEN: AJMFA4; ISSN: 0067-1940
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Components of the Australian bull kelp, D. potatorum, were as percent of the whole stipe dry weight: crude fiber, 57.40; alginic acid (I), 35.15; "cellulosic" polysaccharide, 22.61; laminarin, 1.79; mannitol, 3.20; N, 1.21, ash, 28.09; insol. ash, 8.81; Ca2+, 1.47; Mg2+, 0.44; Na+, 1.45; K+, 3.36; PO43-, 5.15; Cl-, 5.87; SO42-, 3.49; I-, 0.25; and chlorophyll (II), 0.01. Tissue fractionation showed that the peripheral layer contained .apprx.66% of the total II and 75% of the total phenolic compds., but only 10% of the total I. In whole stipes, ≤66% of the I was in a soluble form.

L6 ANSWER 5 OF 7 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1963:450221 CAPLUS
DOCUMENT NUMBER: 59:50221
ORIGINAL REFERENCE NO.: 59:9133d
TITLE: Laminaria as a rich source of vitamins
AUTHOR(S): Khovrenko, P.
SOURCE: Rybn. Prom. Dal'n. Vost. (1962), (5-6), 36-8
From: Ref. Zh., Khim. 1963, Abstr. No. 3R54.
DOCUMENT TYPE: Journal
LANGUAGE: Unavailable
AB The thallus of Laminaria japonica has com. value. It is rich in mannitol, alginic acids, laminarin, and soluble salts, and contains ascorbic acid and B vitamins. Carotene (0.042-0.77%) was found in air-dried L. japonica and 0.084-0.224% after 30 and 12 months' storage, resp., and in frozen and fresh specimens, of 0.303-0.640 and 1.229-1.710% carotene, resp. Only traces of carotene were found in the inner layers of the thallus; most was in the peripheral layers.

L6 ANSWER 6 OF 7 MEDLINE on STN
ACCESSION NUMBER: 2006517279 IN-PROCESS
DOCUMENT NUMBER: PubMed ID: 16816147
TITLE: Differential infection of mononuclear phagocytes by Francisella tularensis: role of the macrophage mannose receptor.
AUTHOR: Schulert Grant S; Allen Lee-Ann H
CORPORATE SOURCE: Inflammation Program and Department of Microbiology, University of Iowa, 2501 Crosspark Rd., Coralville, 52241, USA.
CONTRACT NUMBER: P01-AI44642 (NIAID)
SOURCE: Journal of leukocyte biology, (2006 Sep) Vol. 80, No. 3, pp. 563-71. Electronic Publication: 2006-06-30.
Journal code: 8405628. ISSN: 0741-5400.
PUB. COUNTRY: United States
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
(RESEARCH SUPPORT, N.I.H., EXTRAMURAL)
LANGUAGE: English
FILE SEGMENT: NONMEDLINE; IN-PROCESS; NONINDEXED; Priority Journals
ENTRY DATE: Entered STN: 31 Aug 2006
Last Updated on STN: 12 Dec 2006
AB Francisella tularensis (Ft) is a Gram-negative bacterium and the causative agent of tularemia. It is well established that this organism replicates inside macrophages, but we are only beginning to understand this interface at the molecular level. Herein, we compared directly the ability of Ft subspecies holarctica live-vaccine strain to infect freshly isolated human peripheral blood monocytes, monocyte-derived macrophages (MDM), and cells of the murine macrophage cell line J774A.1 (J774). We now show that unopsonized bacteria infected human MDM fivefold more efficiently than monocytes or J774 cells in standard media. Moreover, enhanced

infection of MDM was mediated, in part, by the macrophage mannose receptor (MR). Forming Ft phagosomes accumulated MR, and infection was inhibited by MR-blocking antibody or soluble mannan but not by the dectin-1 ligand laminarin. Up-regulation of MR in MDM (by exposure to interleukin-4) increased Ft phagocytosis, as did expression of MR in J774 cells. Conversely, opsonized Ft were ingested readily by monocytes and MDM. Medium supplementation with 2.5% fresh autologous serum was sufficient to confer opsonophagocytosis and CD11b accumulated in the membrane at sites of Ft engulfment. Infection of monocytes by opsonized Ft was nearly ablated by complement receptor 3 (CR3) blockade. Conversely, MDM used MR and CD11b/CD18 to ingest opsonized organisms. Altogether, our data demonstrate differential infection of mononuclear phagocytes by Ft and define distinct roles for MR and CR3 in phagocytosis.

L6 ANSWER 7 OF 7 MEDLINE on STN
ACCESSION NUMBER: 2005557696 MEDLINE
DOCUMENT NUMBER: PubMed ID: 16233391
TITLE: Induction of TNF-alpha production from human peripheral blood monocytes with beta-1,3-glucan oligomer prepared from laminarin with beta-1,3-glucanase from Bacillus clausii NM-1.
AUTHOR: Miyanishi Nobumitsu; Iwamoto Yoshiko; Watanabe Etsuo; Odaz Tatsuya
CORPORATE SOURCE: Department of Food Science and Technology, Tokyo University of Fisheries, 4-5-7 Konan, Minato-ku, Tokyo 108-8477, Japan.
SOURCE: Journal of bioscience and bioengineering, (2003) Vol. 95, No. 2, pp. 192-5.
Journal code: 100888800. ISSN: 1389-1723.
PUB. COUNTRY: Japan
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: NONMEDLINE; PUBMED-NOT-MEDLINE
ENTRY MONTH: 200511
ENTRY DATE: Entered STN: 20 Oct 2005
Last Updated on STN: 9 Nov 2005
Entered Medline: 8 Nov 2005

AB We prepared a beta-1,3-glucan oligomer (DP> or = 4) from laminarin (DP: 25-30) derived from Laminaria digitata with beta-1,3-glucanase, and examined its effect on human peripheral blood monocytes. Conditioned medium prepared by incubating monocytes (MC-CM) with the beta-1,3-glucan oligomer showed strong inhibitory activity against the proliferation of human leukemic U937 cells. Since the beta-1,3-glucan oligomer had no direct cytotoxic effect on U937 cells up to 1000 microg/ml, the cytotoxicity of the MC-CM may be due to cytotoxic cytokines produced from monocytes stimulated by the beta-1,3-glucan oligomer. On the other hand, the MC-CM prepared with original laminarin had little effect on the growth of U937 cells. The cytotoxicity of the MC-CM prepared with the beta-1,3-glucan oligomer was significantly reduced by an anti-TNF-alpha antibody, but the anti-TNF-beta antibody had no effect. Our results suggest that the enzymatically depolymerized beta-1,3-glucan oligomer induces TNF-alpha production from human monocytes.

=> d his

(FILE 'HOME' ENTERED AT 16:41:43 ON 15 AUG 2007)

FILE 'CAPLUS, MEDLINE' ENTERED AT 16:44:34 ON 15 AUG 2007
L1 1 S LAMINARIN (P) HEMATOPOIET?
L2 3 S LAMINARIN (P) REGENERAT?
L3 1 S LAMINARIN (P) BONE MARROW?
L4 283 S LAMINARIN (P) CELLS
L5 14 S LAMINARIN (P) BLOOD CELLS

```
L6             7 S LAMINARIN (P) PERIPHERAL?

=> s laminarin (P) growth?
L7           186 LAMINARIN (P) GROWTH?

=> s laminarin (P) growth? (P) promot?
L8             6 LAMINARIN (P) GROWTH? (P) PROMOT?

=> d l8 1-6 ibib abs

L8   ANSWER 1 OF 6  CAPLUS  COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER:         2004:852266  CAPLUS
DOCUMENT NUMBER:          142:18677
TITLE:                    Plant growth promoting composition consisting of
                          antimicrobial microorganisms
INVENTOR(S):              Suh, Hyung Won
PATENT ASSIGNEE(S):       S. Korea
SOURCE:                   Repub. Korea, No pp. given
                          CODEN: KRXXFC
DOCUMENT TYPE:            Patent
LANGUAGE:                 Korean
FAMILY ACC. NUM. COUNT:   1
PATENT INFORMATION:

     PATENT NO.           KIND   DATE        APPLICATION NO.         DATE
     ---------------      ----   --------    --------------------    --------
     KR 183518             B1    19990401    KR 1996-2370            19960131
PRIORITY APPLN. INFO.:                       KR 1996-2370            19960131
AB   A plant growth activating composition and a microbial preparation containing
the same
     are provided which activate the growth of plant and remove pathogenic
     fungi from the plant without harmful effects on other organisms and
     environments. The plant growth activating composition comprises 0.1 to 99.9
     weight% of sawdust, 0.1 to 99.9 weight% of one or more components selected from
     the group consisting of chitin powder, chitosan, laminarin, and
     CM-cellulose, and water, preferably further comprising 0.1 to 5 weight% of
     cellobiose, and more preferably further comprising 0.03 to 1.0 weight% of
     nitrogen source such as ammonium sulfate or ammonium nitrate, wherein the
     plant is preferably cucumber, tomato, ginseng, red pepper, or lettuce.
     The microbial preparation comprises the plant growth activating composition and
     anti-microbial microorganism having the activity of one or more enzyme
     selected from the group consisting of chitinase, cellulase, and glucanase,
     wherein microorganism is preferably Trichoderma sp., Pseudomonas sp.,
     Bacillus sp., Gliocladium sp., Bruklioderia sp., and Actinoplanes sp.

L8   ANSWER 2 OF 6  CAPLUS  COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER:         2004:852265  CAPLUS
DOCUMENT NUMBER:          142:18676
TITLE:                    Plant growth promoting agent composition containing
                          antimicrobial microorganisms
INVENTOR(S):              Suh, Hyung Won
PATENT ASSIGNEE(S):       S. Korea
SOURCE:                   Repub. Korea, No pp. given
                          CODEN: KRXXFC
DOCUMENT TYPE:            Patent
LANGUAGE:                 Korean
FAMILY ACC. NUM. COUNT:   1
PATENT INFORMATION:

     PATENT NO.           KIND   DATE        APPLICATION NO.         DATE
     ---------------      ----   --------    --------------------    --------
     KR 183517             B1    19990401    KR 1996-2371            19960131
PRIORITY APPLN. INFO.:                       KR 1996-2371            19960131
AB   A plant growth activating agent composition and a microbial preparation
containing the
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same are provided which activates the growth of plant and removes pathogenic fungi from the plant without harmful effects on other organisms and environments. The plant growth activating agent composition comprises 0.1 to 16.0 weight% of pectin, 0.5 to 50 weight% of one or more components selected from the group consisting of alginic acid, colloid chitin, chitosan, laminarin, and CM-cellulose, and water, preferably further comprising 0.1 to 5 weight% of glycerol, and more preferably further comprising 0.03 to 1.0 weight% of nitrogen source such as ammonium sulfate or ammonium nitrate, wherein the plant is preferably cucumber, tomato, ginseng, red pepper, and lettuce. The microbial preparation comprises the plant growth activating composition and anti microbial microorganism having the activity of one or more enzyme selected from the group consisting of pectinase, chitinase, alginase, cellulase, and glucanase, wherein the microorganism is preferably Trichoderma sp., Pseudomonas sp., Bacillus sp., Gliocladium sp., Bruklioderia sp., and Actinoplanes sp.

L8 ANSWER 3 OF 6 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1994:187260 CAPLUS
DOCUMENT NUMBER: 120:187260
TITLE: Are ethylene and 1-aminocyclopropane-1-carboxylic acid involved in the induction of chitinase and β-1,3-glucanase activity in sunflower cell-suspension cultures?
AUTHOR(S): Siefert, Frank; Langebartels, Christian; Boller, Thomas; Grossmann, Klaus
CORPORATE SOURCE: Landwirtschaftliche Versuchsstn., BASF, Limburgerhof, D-67114, Germany
SOURCE: Planta (1994), 192(3), 431-40
CODEN: PLANAB; ISSN: 0032-0935
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Auxin-dependent, heterotrophic suspension cells of sunflower (Helianthus annuus L. C.K. Spanners All-zweck) showed, on a cell-protein basis, a seven-fold increase in chitinase activity, which began 5 d after treatment with 10-5 mol·L-1 of the triazole-type growth retardant BAS 111..W. In proportion to this increase, chitinase activity appeared to be excreted into the culture medium. The intracellular activity of β-1,3-glucanase, assayed fluorimetrically with laminarin as the substrate, was only slightly enhanced. Dose-response expts. with BAS 111..W showed that the onset of the induction of chitinase activity coincided with an inhibition of ethylene formation and an accumulation of endogenous 1-aminocyclopropane-1-carboxylic acid (ACC) as a result of blocking the conversion of ACC to ethylene. Other nitrogen-heterocyclic growth retardants (e.g. tetcyclacis, ancymidol), the triazole-type fungicide BAS 480..F, salicylic acid, CoCl2 and 2,4-D, which also increased the ACC/ethylene ratio, similarly induced chitinase activity. In contrast, aminoethoxy vinylglycine, which simultaneously lowered endogenous ACC and ethylene formation, did not stimulate chitinase activity. However, after addition of BAS 111..W and ACC, an accumulation of endogenous ACC was accompanied by a strong induction of the enzymic activity. This effect did not correlate with changes in the cell culture growth nor in the cellular contents of immunoreactive abscisic acid, IAA, gibberellins or cytokinins. Furthermore, ethephon, which chemical generates ethylene, led to a slight reduction in ACC levels and tended to decrease chitinase activity relative to the control. Thus, the induction of chitinase activity in sunflower cell suspensions is antagonistically regulated by ethylene and ACC. At least at higher production rates, ethylene appears to function as an inhibiting factor whereas ACC may be a promoting one. The stimulation of chitinase and β-1,3-glucanase activity, caused by the retardant BAS 111..W and the fungicide BS 480..F, is discussed as an addnl. effect of both compds. which possibly leads to an increased resistance of plants to fungal infections.

L8 ANSWER 4 OF 6 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1977:68198 CAPLUS
DOCUMENT NUMBER: 86:68198
TITLE: Production and catabolite repression of Penicillium italicum β-glucanases
AUTHOR(S): Santos, Tomas; Villanueva, Julio R.; Nombela, Cesar
CORPORATE SOURCE: Fac. Sci., Univ. Salamanca, Salamanca, Spain
SOURCE: Journal of Bacteriology (1977), 129(1), 52-8
CODEN: JOBAAY; ISSN: 0021-9193
DOCUMENT TYPE: Journal
LANGUAGE: English
AB The filamentous fungus P. italicum, grown in a defined liquid medium, produced β-1,3-glucanase, which remained essentially bound to the cells, and β-1,6-glucanase, an essentially extracellular enzyme. When glucose was depleted from the medium, when a limited concentration of glucose (0.2%) was maintained, or when the C source was galactose (3%) or lactose (3%), a significant increase in the sp. activity of β-1,3-glucanase in cell exts. took place. This was paralleled by a very slow rate of growth, and under glucose limitation, the appearance of β-1,3-glucanase in the medium was also observed On the other hand, when an excess of glucose, fructose, or sucrose was present, the sp. activity remained constant and active growth was promoted. Laminarin, cellobiose, gentiobiose, and isolated P. italicum walls did not significantly induce β-1,3-glucanase synthesis to a level beyond that attained by glucose limitation. A similar behavior was observed for β-1,6-glucanase. β-1,3-Glucanase and β-1,6-glucanase are therefore constitutive enzymes subjected to catabolite repression. The results are discussed in the context of the possible functions that have been suggested for glucanases and related enzymes.

L8 ANSWER 5 OF 6 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1974:446724 CAPLUS
DOCUMENT NUMBER: 81:46724
TITLE: Fungal enzymes active in hydrolyzing yeast cell wall. I. Production, purification, crystallization, and some properties of yeast cell lytic enzyme from a species of Fungi Imperfecti
AUTHOR(S): Yamamoto, Shimpei; Fukuyama, Juichi; Nagasaki, Susumu
CORPORATE SOURCE: Fac. Agric., Kochi Univ., Kochi, Japan
SOURCE: Agricultural and Biological Chemistry (1974), 38(2), 329-37
CODEN: ABCHA6; ISSN: 0002-1369
DOCUMENT TYPE: Journal
LANGUAGE: English
AB An enzyme (mol. weight 24,500) which degrades yeast glucan and yeast cells in the logarithmic phase of growth was crystallized from the culture filtrate of Fungi Imperfecti. The enzyme catalyzed the hydrolysis of laminarin, pachyman, and yeast glucan to produce a mixture of laminaridextrins. The conversion of yeast cells in the logarithmic phase of growth to protoplasts by the enzyme was promoted by addition of mercaptoethanol or phosphomannanase.

L8 ANSWER 6 OF 6 MEDLINE on STN
ACCESSION NUMBER: 77071313 MEDLINE
DOCUMENT NUMBER: PubMed ID: 830646
TITLE: Production and catabolite repression of Penicillium italicum beta-glucanases.
AUTHOR: Santos T; Villanueva J R; Nombela C
SOURCE: Journal of bacteriology, (1977 Jan) Vol. 129, No. 1, pp. 52-8.
Journal code: 2985120R. ISSN: 0021-9193.
PUB. COUNTRY: United States
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)

LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 197702
ENTRY DATE: Entered STN: 13 Mar 1990
Last Updated on STN: 3 Feb 1997
Entered Medline: 26 Feb 1977

AB The filamentous fungus Penicillium italicum, grown in a defined liquid medium, produced beta-1,3-glucanase, which remained essentially bound to the cells, and beta-1,6-glucanase, an essentially extracellular enzyme. When glucose was depleted from the medium, when a limited concentration of glucose (0.2%) was maintained, or when the carbon source was galactose (3%) or lactose (3%), a significant increase in the specific activity of beta-1,3-glucanase, in cell extracts, took place. This was paralleled by a very slow rate of growth, and under glucose limitation, the appearance of beta-1,3-glucanase in the medium was also observed. On the other hand, when an excess of glucose, fructose, or sucrose was present, the specific activity remained constant and active growth was promoted. Laminarin, cellobiose, gentiobiose, and isolated Penicillium italicum walls were not capable of significantly inducing beta-1,3-glucanase synthesis to a level beyond that attained by glucose limitation. A similar behavior was observed for beta-1,6-glucanase. beta-1,3-Glucanase and beta-1,6-glucanase are therefore constitutive enzymes subjected to catabolite repression. The results are discussed in the context of the possible functions that have been suggested for glucanases and related enzymes.

L8 ANSWER 1 OF 6 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2004:852266 CAPLUS
DOCUMENT NUMBER: 142:18677
TITLE: Plant growth promoting composition consisting of antimicrobial microorganisms
INVENTOR(S): Suh, Hyung Won
PATENT ASSIGNEE(S): S. Korea
SOURCE: Repub. Korea, No pp. given
CODEN: KRXXFC
DOCUMENT TYPE: Patent
LANGUAGE: Korean
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
KR 183518	B1	19990401	KR 1996-2370	19960131

PRIORITY APPLN. INFO.: KR 1996-2370 19960131

AB A plant growth activating composition and a microbial preparation containing the same are provided which activate the growth of plant and remove pathogenic fungi from the plant without harmful effects on other organisms and environments. The plant growth activating composition comprises 0.1 to 99.9 weight% of sawdust, 0.1 to 99.9 weight% of one or more components selected from the group consisting of chitin powder, chitosan, laminarin, and CM-cellulose, and water, preferably further comprising 0.1 to 5 weight% of cellobiose, and more preferably further comprising 0.03 to 1.0 weight% of nitrogen source such as ammonium sulfate or ammonium nitrate, wherein the plant is preferably cucumber, tomato, ginseng, red pepper, or lettuce. The microbial preparation comprises the plant growth activating composition and anti-microbial microorganism having the activity of one or more enzyme selected from the group consisting of chitinase, cellulase, and glucanase, wherein microorganism is preferably Trichoderma sp., Pseudomonas sp., Bacillus sp., Gliocladium sp., Bruklioderia sp., and Actinoplanes sp.

L8 ANSWER 2 OF 6 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2004:852265 CAPLUS
DOCUMENT NUMBER: 142:18676
TITLE: Plant growth promoting agent composition containing antimicrobial microorganisms
INVENTOR(S): Suh, Hyung Won
PATENT ASSIGNEE(S): S. Korea
SOURCE: Repub. Korea, No pp. given
CODEN: KRXXFC
DOCUMENT TYPE: Patent
LANGUAGE: Korean
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
KR 183517	B1	19990401	KR 1996-2371	19960131

PRIORITY APPLN. INFO.: KR 1996-2371 19960131

AB A plant growth activating agent composition and a microbial preparation containing the same are provided which activates the growth of plant and removes pathogenic fungi from the plant without harmful effects on other organisms and environments. The plant growth activating agent composition comprises 0.1 to 16.0 weight% of pectin, 0.5 to 50 weight% of one or more components selected from the group consisting of alginic acid, colloid chitin, chitosan, laminarin, and CM-cellulose, and water, preferably further comprising 0.1 to 5 weight% of glycerol, and more preferably further comprising 0.03 to 1.0 weight% of nitrogen source such as ammonium sulfate or ammonium nitrate,

wherein the plant is preferably cucumber, tomato, ginseng, red pepper, and lettuce. The microbial preparation comprises the plant growth activating composition and anti microbial microorganism having the activity of one or more enzyme selected from the group consisting of pectinase, chitinase, alginase, cellulase, and glucanase, wherein the microorganism is preferably Trichoderma sp., Pseudomonas sp., Bacillus sp., Gliocladium sp., Bruklioderia sp., and Actinoplanes sp.

L8 ANSWER 3 OF 6 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1994:187260 CAPLUS
DOCUMENT NUMBER: 120:187260
TITLE: Are ethylene and 1-aminocyclopropane-1-carboxylic acid involved in the induction of chitinase and β-1,3-glucanase activity in sunflower cell-suspension cultures?
AUTHOR(S): Siefert, Frank; Langebartels, Christian; Boller, Thomas; Grossmann, Klaus
CORPORATE SOURCE: Landwirtschaftliche Versuchsstn., BASF, Limburgerhof, D-67114, Germany
SOURCE: Planta (1994), 192(3), 431-40
CODEN: PLANAB; ISSN: 0032-0935
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Auxin-dependent, heterotrophic suspension cells of sunflower (Helianthus annuus L. C.K. Spanners All-zweck) showed, on a cell-protein basis, a seven-fold increase in chitinase activity, which began 5 d after treatment with 10-5 mol·L-1 of the triazole-type growth retardant BAS 111..W. In proportion to this increase, chitinase activity appeared to be excreted into the culture medium. The intracellular activity of β-1,3-glucanase, assayed fluorimetrically with laminarin as the substrate, was only slightly enhanced. Dose-response expts. with BAS 111..W showed that the onset of the induction of chitinase activity coincided with an inhibition of ethylene formation and an accumulation of endogenous 1-aminocyclopropane-1-carboxylic acid (ACC) as a result of blocking the conversion of ACC to ethylene. Other nitrogen-heterocyclic growth retardants (e.g. tetcyclacis, ancymidol), the triazole-type fungicide BAS 480..F, salicylic acid, CoCl2 and 2,4-D, which also increased the ACC/ethylene ratio, similarly induced chitinase activity. In contrast, aminoethoxy vinylglycine, which simultaneously lowered endogenous ACC and ethylene formation, did not stimulate chitinase activity. However, after addition of BAS 111..W and ACC, an accumulation of endogenous ACC was accompanied by a strong induction of the enzymic activity. This effect did not correlate with changes in the cell culture growth nor in the cellular contents of immunoreactive abscisic acid, IAA, gibberellins or cytokinins. Furthermore, ethephon, which chemical generates ethylene, led to a slight reduction in ACC levels and tended to decrease chitinase activity relative to the control. Thus, the induction of chitinase activity in sunflower cell suspensions is antagonistically regulated by ethylene and ACC. At least at higher production rates, ethylene appears to function as an inhibiting factor whereas ACC may be a promoting one. The stimulation of chitinase and β-1,3-glucanase activity, caused by the retardant BAS 111..W and the fungicide BS 480..F, is discussed as an addnl. effect of both compds. which possibly leads to an increased resistance of plants to fungal infections.

L8 ANSWER 4 OF 6 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1977:68198 CAPLUS
DOCUMENT NUMBER: 86:68198
TITLE: Production and catabolite repression of Penicillium italicum β-glucanases
AUTHOR(S): Santos, Tomas; Villanueva, Julio R.; Nombela, Cesar
CORPORATE SOURCE: Fac. Sci., Univ. Salamanca, Salamanca, Spain
SOURCE: Journal of Bacteriology (1977), 129(1), 52-8

CODEN: JOBAAY; ISSN: 0021-9193
DOCUMENT TYPE: Journal
LANGUAGE: English
AB The filamentous fungus P. italicum, grown in a defined liquid medium, produced β-1,3-glucanase, which remained essentially bound to the cells, and β-1,6-glucanase, an essentially extracellular enzyme. When glucose was depleted from the medium, when a limited concentration of glucose (0.2%) was maintained, or when the C source was galactose (3%) or lactose (3%), a significant increase in the sp. activity of β-1,3-glucanase in cell exts. took place. This was paralleled by a very slow rate of growth, and under glucose limitation, the appearance of β-1,3-glucanase in the medium was also observed On the other hand, when an excess of glucose, fructose, or sucrose was present, the sp. activity remained constant and active growth was promoted. Laminarin, cellobiose, gentiobiose, and isolated P. italicum walls did not significantly induce β-1,3-glucanase synthesis to a level beyond that attained by glucose limitation. A similar behavior was observed for β-1,6-glucanase. β-1,3-Glucanase and β-1,6-glucanase are therefore constitutive enzymes subjected to catabolite repression. The results are discussed in the context of the possible functions that have been suggested for glucanases and related enzymes.

L8 ANSWER 5 OF 6 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1974:446724 CAPLUS
DOCUMENT NUMBER: 81:46724
TITLE: Fungal enzymes active in hydrolyzing yeast cell wall. I. Production, purification, crystallization, and some properties of yeast cell lytic enzyme from a species of Fungi Imperfecti
AUTHOR(S): Yamamoto, Shimpei; Fukuyama, Juichi; Nagasaki, Susumu
CORPORATE SOURCE: Fac. Agric., Kochi Univ., Kochi, Japan
SOURCE: Agricultural and Biological Chemistry (1974), 38(2), 329-37
CODEN: ABCHA6; ISSN: 0002-1369
DOCUMENT TYPE: Journal
LANGUAGE: English
AB An enzyme (mol. weight 24,500) which degrades yeast glucan and yeast cells in the logarithmic phase of growth was crystallized from the culture filtrate of Fungi Imperfecti. The enzyme catalyzed the hydrolysis of laminarin, pachyman, and yeast glucan to produce a mixture of laminaridextrins. The conversion of yeast cells in the logarithmic phase of growth to protoplasts by the enzyme was promoted by addition of mercaptoethanol or phosphomannanase.

L8 ANSWER 6 OF 6 MEDLINE on STN
ACCESSION NUMBER: 77071313 MEDLINE
DOCUMENT NUMBER: PubMed ID: 830646
TITLE: Production and catabolite repression of Penicillium italicum beta-glucanases.
AUTHOR: Santos T; Villanueva J R; Nombela C
SOURCE: Journal of bacteriology, (1977 Jan) Vol. 129, No. 1, pp. 52-8.
Journal code: 2985120R. ISSN: 0021-9193.
PUB. COUNTRY: United States
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 197702
ENTRY DATE: Entered STN: 13 Mar 1990
Last Updated on STN: 3 Feb 1997
Entered Medline: 26 Feb 1977
AB The filamentous fungus Penicillium italicum, grown in a defined liquid medium, produced beta-1,3-glucanase, which remained essentially bound to

the cells, and beta-1,6-glucanase, an essentially extracellular enzyme. When glucose was depleted from the medium, when a limited concentration of glucose (0.2%) was maintained, or when the carbon source was galactose (3%) or lactose (3%), a significant increase in the specific activity of beta-1,3-glucanase, in cell extracts, took place. This was paralleled by a very slow rate of growth, and under glucose limitation, the appearance of beta-1,3-glucanase in the medium was also observed. On the other hand, when an excess of glucose, fructose, or sucrose was present, the specific activity remained constant and active growth was promoted. Laminarin, cellobiose, gentiobiose, and isolated Penicillium italicum walls were not capable of significantly inducing beta-1,3-glucanase synthesis to a level beyond that attained by glucose limitation. A similar behavior was observed for beta-1,6-glucanase. beta-1,3-Glucanase and beta-1,6-glucanase are therefore constitutive enzymes subjected to catabolite repression. The results are discussed in the context of the possible functions that have been suggested for glucanases and related enzymes.

L9 ANSWER 1 OF 1 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1988:466355 CAPLUS
DOCUMENT NUMBER: 109:66355
TITLE: Preparation, analysis and biological activities of laminarin and laminarin sulfate
AUTHOR(S): Fan, Manfang; Chen, Qionghua
CORPORATE SOURCE: Div. Biochem., China Pharm. Univ., Nanjing, Peop. Rep. China
SOURCE: Zhongguo Yaoke Daxue Xuebao (1988), 19(1), 30-4
CODEN: ZHYXE9; ISSN: 1000-5048
DOCUMENT TYPE: Journal
LANGUAGE: Chinese

AB Laminarin (I) and I sulfate were obtained from Luminaria japonica. These two polysaccharides contained 60.4 and 31.1% sugar, resp., without protein and nucleic acid. Mol. wts. were 40,000 and 80,000 resp. The acute LD50 of the two polysaccharides by i.p. injection in mice were 980 and 689 mg/kg, resp. I and I sulfate enhanced the phagocytosis of macrophage and increased the content of hemolysin in serum of the sensitized mice. They stimulated lymphocyte transformation. In addition, I caused red cell agglutination. The two polysaccharides showed a remarkable antagonistic action to leukopenia, while I also had a remarkable antiradiation effect. The two polysaccharides decreased the concentration of cholesterol in serum. I sulfate was capable of delaying fibrin clotting time and thrombinogen time. It promoted solution of euglobulin of rabbits in vivo. Nevertheless, I showed much less remarkable effects.

L10 ANSWER 1 OF 2 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2005:259651 CAPLUS
DOCUMENT NUMBER: 142:291363
TITLE: Chemotherapeutic antineoplastic treatment
INVENTOR(S): Yvin, Jean-Claude; Vetvicka, Vaclav
PATENT ASSIGNEE(S): Fr.
SOURCE: U.S. Pat. Appl. Publ., 10 pp.
CODEN: USXXCO
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2005065111	A1	20050324	US 2003-668661	20030923
WO 2005027938	A1	20050331	WO 2004-EP10993	20040916
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
EP 1663260	A1	20060607	EP 2004-787076	20040916
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, FI, RO, CY, TR, BG, CZ, EE, HU, PL, SK				

PRIORITY APPLN. INFO.: US 2003-668661 A 20030923
WO 2004-EP10993 W 20040916

AB Chemotherapeutic method for the treatment of cancer comprising administration of an effective amount of an antineoplastic agent in conjunction with an effective amount of a β-1,3 glucan is disclosed.

L10 ANSWER 2 OF 2 CAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2000:157159 CAPLUS
DOCUMENT NUMBER: 132:344175
TITLE: Quantitative high-performance liquid chromatographic determination of acrolein in plasma after derivatization with Luminarin 3
AUTHOR(S): Paci, A.; Rieutord, A.; Guillaume, D.; Traore, F.; Ropenga, J.; Husson, H.-P.; Brion, F.
CORPORATE SOURCE: Service de Pharmacie-Toxico-Pharmacologie, Hopital Robert Debre, Paris, 75019, Fr.
SOURCE: Journal of Chromatography, B: Biomedical Sciences and Applications (2000), 739(2), 239-246
CODEN: JCBBEP; ISSN: 0378-4347
PUBLISHER: Elsevier Science B.V.
DOCUMENT TYPE: Journal
LANGUAGE: English

AB A rapid, sensitive and specific high-performance liquid chromatog. method for the quantification of acrolein (1), one of the toxic metabolites of oxazaphosphorine alkylating agents (cyclophosphamide and ifosfamide) was developed. Condensation of acrolein with Luminarin 3 afforded a fluorescent derivative that could be specifically detected and quantified. Chromatog. conditions involved a C18 RP column Uptisphere and a gradient elution system to optimize resolution and time anal. The method showed high sensitivity with a limit of detection of 100 p mol/mL and a limit of quantification of 300 p mol/mL. This technique is particularly suitable for pharmacokinetic studies on plasma of oxazaphosphorine-receiving

patients.

REFERENCE COUNT: 19 THERE ARE 19 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT